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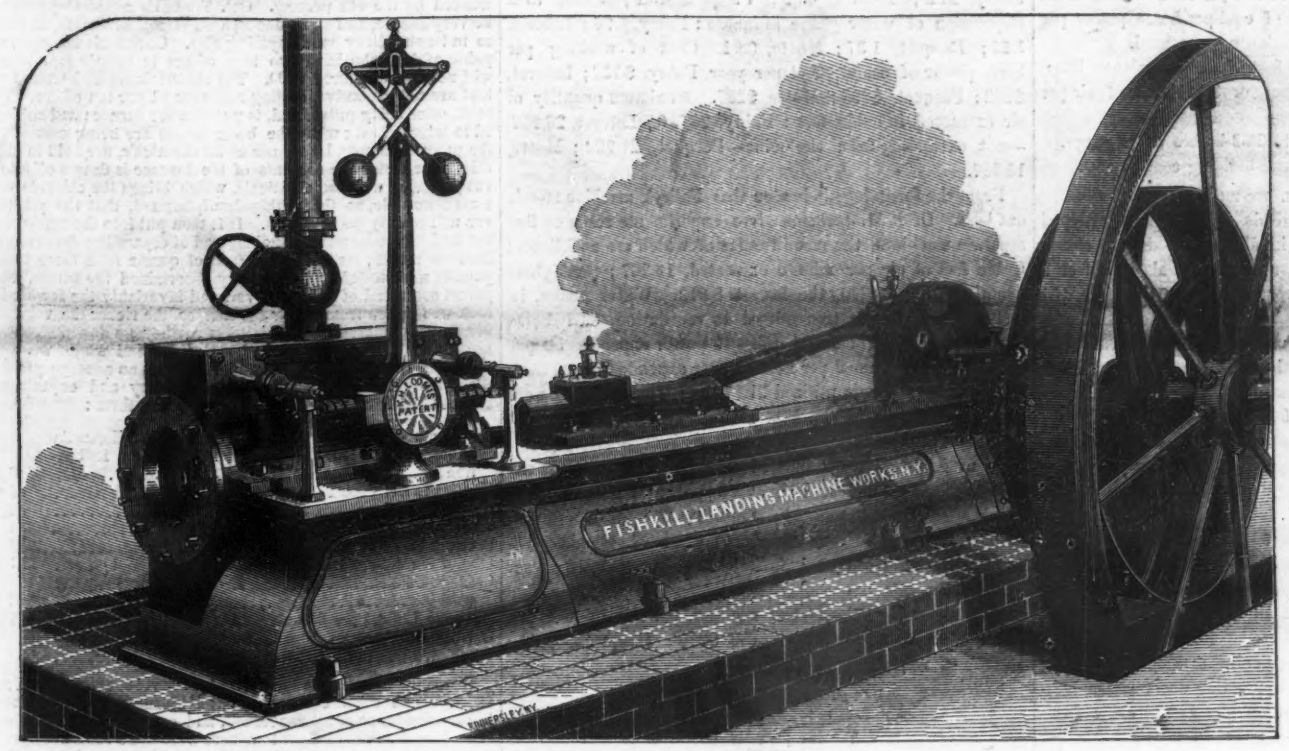
LOOMIS' PATENT CUT-OFF ENGINE.

This engine is constructed in accordance with principles that have been proved sound by practice, and is admitted to be as complete as any engine now in use. It combines all that is necessary in point of economy, simplicity, beauty and durability; and embracing all these points, it is claimed to be far ahead of all other cut-off engines. The great advantage this engine has over all others is that the steam enters the cylinder at boiler pressure, not being throttled or "wire-drawn," as in other engines, where a governor valve is employed, but entering the boiler pressure at the greates point of economy. The cut-off is variable, taking its steam according to the level required, giving no more than is actually needed and taking no more than is necessary to drive the load, thus giving a uniform speed and wasting nothing.

There is no power lost in moving the valves; and, unlike all other valves, the pressure is on the valve-seat, not on the valve. The valves are warranted to out-last any other part of the engine, and to remain tight without causing trouble. Being perfectly balanced they require no more force to move them when a pressure of 90 lbs. is upon them than when without any pressure, they being surrounded by steam. The steam valves are opened instantly at the proper time, and at the proper time close as quick as thought. The length of time they remain open is determined by the governor, thus allowing the steam to flow in from the boiler and follow the piston one inch, and instantly cut-off; or, if the amount of work the engine is doing requires steam to follow the whole length of the cylinder it will do so.

Fig. 2. represents the Loomis Patent Balanced Valve Variable Cut-off. This Cut-off is intended to attach to the ordinary Engine; that is to Engines that are not built as Variable Cut-off Engines, but are controlled by the Governor Valve. Henson's Patent Centrifugal Governor is used in all of these Cut-offs; having the advantage of producing no friction, and being the best and most sensitive Governor in use. This Cut-off is a perfect controller of the Engine, varying the stroke of steam according to the amount of the work performed, and is warranted to save twenty-five (25) per cent. of fuel on any engine to which it is attached. It is very simple in its construction—can be easily attached to any engine in a few hours, thus enabling parties now using engines to bring them nearly up to the standard of the best Cut-off Engines. If after a fair trial the Cut-off should be found not to come up to description, it can be removed, and the engine placed as it was before without any expense. For further information respecting the engine or the Cut-off address KELLOG H. LOOMIS, 117 Liberty street, New York City.



LOOMIS' PATENT CUT-OFF ENGINE.—Fig. 1.

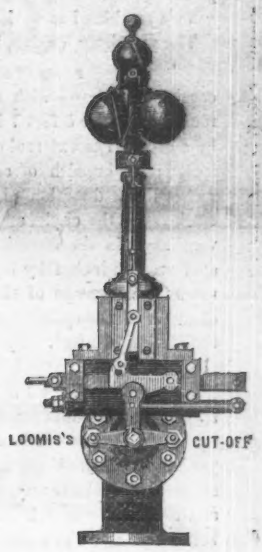


Fig. 2.

Copper Mining on the Rhine, The Wet Process for Poor Ores.

Luiz, a town on the Rhine, near Godesberg, is a minnig town with a history running back a thousand years. This town has been for the last two centuries the center of the copper, lead, and blende trade of the district; and about a mile up the valley stands the old smelting works in which Herr Rhodius, the father of the present propietor, invented and patented the "wet process" for the reduction of poor copper by means of sulphuric and muriatic acids, which, although known to many, might be much more generally and successfully practiced elsewhere, as by it ores containing 1 per cent. are profitably worked in Rhineland, the Hartz Mountains, and elsewhere in Germany. The process may be briefly described as follows:

The poor sulphides and the poor oxides, only are worked by the wet or acid processes, the richer ores are all smelted by the old process. First the poor sulphides, from ¾ to 3½ per cent., are roasted in a cupola furnace, about ten by three feet, charged with alternate layers of ore and fuel, and when drawn from the bottom and freed from sulphur are crushed, thrown into a mason-work basin, about twenty feet long by five feet deep, having a false bottom of horizontal layers of basalt, supported by basalt pillars, about one foot high. Blende, slightly roasted and crushed, is placed on the hearth of a retort furnace, and raised to a high heat; air is forced into the retort to furnish oxygen to convert the sulphur in the blende into sulphurous acid gas; this, passing through the chimney, enters the vats beneath the crushed ore, mixed on its way with steam from a boiler, and passing through the apparatus between the horizontal basalt, penetrates the mass of crushed ore, and coming in contact with the oxides of copper and other metals formed from the sulphides by roasting, the oxygen is absorbed and soluble sulphates are produced, and fall in solution to the bottom of the vats. From this the fluid is pumped whilst hot into wooden tanks built firmly in clay, containing scrap and cast iron, and the copper precipitated as cement copper containing 35 to 40 per cent. of metal, the iron going into solution in its stead. The zinc blende left in the retorts is utilized; the liquor remaining is concentrated by being passed into shallow receivers, and crystallized sulphate of iron (copperas) obtained. The mother liquor has a still further use.—*Sci. Press.*

New California Production.

The San Francisco *Times* calls attention to a new polishing substance which has recently been introduced, and which is said by those, competent to judge, to be superior to anything previously known. It says: This substance is found near the ocean beach, just beyond the Ocean House, and within the city limits. It is a white hard rock, which being ground and properly prepared, possesses a remarkable cleansing and polishing power. The discoverer is Charles E. Merrill, well known throughout the State as President of the Settlers' Association. He has spent some time in experimenting upon it, and now produces a powder which, for cleansing paint, plaster, glass, furniture, and for polishing tin, brass, silver plate, machinery, marble, etc., is highly recommended. It has been introduced in the army and navy, steamers, etc., and has everywhere given great satisfaction. The supply of the mineral is practically inexhaustible, and the proximity of the mine to market makes the cost of production very light. When it is fairly introduced, the demand, not only here, but in the East and in Europe, must be very large, as it is superior for many purposes to anything previously known. Mr. Merrill also uses this substance as a base for a liquid silver plating, by which a coating of pure silver can be readily applied to any article by means of a brush or cloth.

New Mines.

Of the new discoveries of gold mines within the borders of Colorado, the Omaha *Republican* says: "These discoveries are situated about forty miles southwest of Laramie City, near the North Park, in the bed of a stream nearly as large as the Laramie river at Laramie and called Last Chance Creek. Ten miles of the ground have been prospected, more or less, and all of it shows good. Four miles of this prospected tract are known to be paying. About two f et of "strippings," caused by beaver-dams, has to be passed through first. This is very easily disposed of, and then commences the pay work. The bed-rock has not yet been reached, but it is estimated that there is at least six feet of pay dirt above it. In the tract now worked, the yield is from one to ten cents to the pan by green hands. As high as eleven cents has been taken out. The prospects for paying quartz are also very good —fully equal to the quartz mines of Colorado." Reports of new discoveries are universally exaggerated. We hope it may not be so this time.

Practical Letters.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON THE VENTILATION OF COAL MINES.—NO. VII.

BY J. W. HARDEN, M. E.

LETORET'S INCLINED VANE FAN.

This fan has four flat vanes fixed at an angle of from 110° to 130°, to radial arms. The air enters on each side at the centre, and passes out either at one square aperture, or the whole circumference is left open.

At Grand Veine, at Elouge near Mons, the outside diameter of the vanes is 9 feet 2 inches, the inner and the circular aperture for the entrance of the air 4 feet 6 inches; the inclination of vanes to radius 120°; the vanes are 3 feet 3 inches high, and 3 feet 11 inches wide. The motion is given by a strap which multiplies four times. The horizontal cylinder is 12½ inches in diameter, the stroke 2 feet ½ an inch, and the steam is cut off at 4-5 of the stroke. The downcast pit is 308 yards deep, and 9 feet in diameter; the upcast (ladder) pit is 279 yards deep and 5 feet 9 inches diameter. There are two main splits of air, and four minor; the total length of all the splits is 1,083 yards; average section 30 square feet. The two seams worked are 30, inches and 48 inches thick. The quantity of air extracted was 14,350 cubic feet, at 1 6-10 inches water gauge, at 240 revolutions of the fan. The useful effect was 28 per cent.

When one of the galleries was closed the fan made 228 revolutions, the air exhausted was 7,650 cubic feet per minute, at 2 inches water gauge the useful effect was 2.46 horse power, the moving force 12.18 horse power, the useful effect 20 per cent.

In the first trial here, we have 12.18 horse power expended in lifting 14,350 cubic feet of air per minute, with a drag of 1.6 inches of water guage or 8.32 lbs. per foot, which, at M. Jochams' average of 12.08 lbs. of coal per horse power per hour, gives 5,900 feet of air per minute, per pound.

In the second, we have 7,650 feet of air per minute lifted with a drag of 10.40 lbs. per foot, or 3,144 feet of air per pound of coal.

This machine has worked up to 2.32 inches water guage.

The ventilator, engine, boiler and building cost $1,400.

PASQUET'S SPIRAL VENTILATOR

consists of a screw with six threads of sheet iron wrapped round a cylinder 5 feet 7 inches in diameter, which is closed by a disk. The external diameter of the spirals is 8 feet 2 inches; the breadth of each thread or vane is, therefore, 15½ inches in the direction of the radius. Each vane passes one-sixth round the circle, and the amount of pitch, or breadth of ventilator, in the direction of the radius, is 8 inches. Each aperture is 8 inches by 15½ inches, and the sum of the apertures for the escape of the air 5.16 square feet in area. The diameter of the cylinder of the steam engine is 12½ inches; the stroke, two feet. By wheel gearing, the velocity is multiplied 6.6 times.

At Moulin a Vent Pit, La Reunion Colliery, at Montigny-sur-Sambre, the downcast pit is 68 square feet in area, the upcast 26 square feet in area, and the depth of each is 317 yards. There are three main splits, two of which are again subdivided. The total length of all the splits is 1,346 yards, and the average area 25 square feet. When the steam in the boiler was at 31 pounds, and the engine making 50 strokes, the spiral 330 revolutions per minute, the water gauge indicating 1.8 inches, the quantity of air was 12.720 cubic feet; the work utilized 3.60 horse power; the work communicated to the axis of the machine 10.87 horse power; the ratio, therefore, of useful effect to power was 33 per cent. When no air was allowed to pass through the ventilator, with a pressure of 32 pounds in the boiler, there was 306 revolutions per minute, and the exhaustion upon the air measured by 2.4 inches water guage. The best effect is with about one inch of water gauge. With this machine, in the instance given, we obtain 5,861 feet of air per minute, per pound of coal consumed, with a drag of 9.36 pounds per foot.

LESOINNE'S WINDMILL VENTILATOR,

similar in construction to Biram's Anemometer, was first built on a large scale in 1845.

At the Grant Bac Colliery, near Liege, the ventilator is 8 feet 8 inches in diameter, and 9 inches wide in the direction of the axis. Smeaton's angles for the direction of the sails of windmills have been adopted, and the vanes at the circumference are inclined at an angle of seven degrees to the diameter, and near the centre at an angle of 19°. It is set in motion by a strap which multiplies four times. The steam engine has a cylinder 7½ inches in diameter, and a stroke of 22½ inches.

The downcast shaft is 273 yards deep, and 70 square feet area; the upcast, 35 square feet in area. The average length of the air courses is 2,200 yards, and their area 30 square feet.

When the steam was at 30 pounds in the boiler, there were 162 revolutions, the quantity of air 15,900 cubic feet per minute, the water gauge one-fifth of an inch.

Another of these ventilators, of nearly the same dimensions, with 201 revolutions, gave 19,300 cubic feet per minute, with 0.52 of an inch water gauge, and the highest water gauge ever obtained by Lesoinne's Ventilator is 0.56 of an inch.

COMBES' CURVED VANE FAN.

The air enters on one or both sides of the centre, and is expelled from the circumference by from three to six curved vanes.

At Grand Hornu, near Mons, the diameter of the outer ends of the vanes was four feet eight inches; of the inner, and of the aperture for the entrance of the air, three feet seven inches. The vanes, which were three in number, formed an angle of 15 degrees with the inner circle, and ended as tangents to the outer circumference. The axis was vertical, the upper side closed by a disk, the centre of the lower side was opened to the shaft, and a ring or collar of sheet iron, five inches in depth, dipped into water to prevent loss of air.

At 570 revolutions per minute 5,870 cubic feet of air were exhausted at 0.86 of an inch water gauge, and 0.78 of a horse power was utilized; 4.96 horse power was transmitted to the fan. The ratio, therefore, of useful effect was 16 per cent. With an improved fan of this kind, and with apertures on each side, as much as 26 or even 29 per cent. of useful effect has been obtained by Monsieur Glépin. With 516 revolutions, 8,460 cubic feet of air were obtained at a drag of 0.84 of an inch water gauge.

Of the comparative economy of the four kinds of fans, said to be those most in use, M. Jocham's, "Engineer of mines," gives the following abstract:

Cost of first establishment, not including the boilers, Fabry's, $1,896; Letoret's, $1,260; Pasquet's, $975; Motte's, $832. Quantity of air extracted in cubic feet per minute: Fabry, 19,758; Letoret, 13,540; Pasquet, 16,002; Motte, 10,932. Motive power transmitted to ventilator in horse power: Fabry, 10.37; Letoret, 11.37; Pasquet, 9.56; Motte, 6.50. Useful effect obtained in horse power: Fabry, 6.22; Letoret, 3.58; Pasquet, 3.52; Motte, 1.65. Proportion of useful effect to power transmitted: Fabry, 0.60; Letoret, 0.32; Pasquet, 0.37; Motte. 0.25. Coal consumed per horse power per hour in lbs.: Fabry, 12.2; Letoret, 12.87; Pasquet, 15.9; Motte, 17.4. Coal consumed per horse power utilized: Fabry, 21.5; Letoret, 43.9; Pasquet, 45.1; Motte, 73.6. Depression of water gnage in inches: Fabry, 1.96; Letoret, 1.65; Pasquet, 1.37; Motte, 0.94. Cost of working per horse power of useful effect per year, Fabry, $132; Letoret, $282; Pasquet, $293; Motte, $287. Maximum quantity of air extracted in cubic feet: Fabry, 25,590; Letoret, 26,256, —not extracting from the mine—Pasquet, 21,982; Motte, 15,397.

From the foregoing, it is seen that Fabry's machine stands out best. Of it M. Jachams gives experiments made on five separate machines, the mean results of which are as follows: Cubic feet of air per minute extracted, 16,267; the highest quantity being 20,330, the lowest 8,912. Water guage, in inches, 2.26. Power transmitted to ventilation, 8.87 horse power, proportion of useful effect to power expended 58 per cent. Coal consumed per horse power expended, 12.08 lbs.; ditto per horse power utilized 21.17 lbs. The machines were new, and fitted up in the best manner with horizontal cylinders and direct action.

Of useful effect to transmitted power, M. Ponson gives examples of six machines. Fabry's, 53 per cent.; Pasquet's, 26; Lesoinnes' Windmill pan, 24; Letoret's, 24; Motte's Screw, 19; Combes' curved vaned Fan, 15; while M. Glépin gives to Combes' 28 per cent.; Motte's, 22; Letoret's, 18; Pasquet's, 16.

M. Ponson gives the cost of working, per horse power, per year: Fabry's, $100; Lesoinne's, $800; Pasquet's, $215; Motte's, $680; Combes', 630.

Mining Summary.

GOLD AND SILVER.

Minnesota.

THE VERMILLION MINES.

Col. WM. H. NOBLES has just made a report to the Chamber of Commerce of the city of St. Paul, Minn., on the prospects of the Vermillion Mining District, Col. Tindall's process, etc., etc., which appears in the form of quite a lengthy article in the Lake Superior *Gazette*. We give below the gist of what he says in regard to the District. To say that we have full faith in what the report says in reference to the gold yield of the ores when worked by the new process would be far from the truth. In looking over what is communicated in the report we find there very safe expressions, which, at bottom, imply a serious doubt. "It is believed, or said, or it is my opinion, etc., etc.," in altogether too frequent use. A little more of the positive, the definite would leave a much better impression upon the mind of the reader. And then, again, how is it that Col. Tindall's wonderful process brings out precious metal to an amount varying from $56 23 to $243 60 per ton of surface rock, when we learn from the files of the JOURNAL OF MINING that the average of a large number of official assays of surface ore gave an average of silver and gold both of only about $20 per ton. If the rock of all the veins enumerated is as rich as reported by Col. Nobles, how comes it that he speaks of stamp-mills going up expressly for tests. If the veins are as rich as he states, most assuredly mills for stamping, and works for extracting the metal should go up on a larger scale, and that, too, at once. There has been from the beginning, with the exception of, perhaps, a few official notices, altogether too much of glitter and flash in the reports of these same Vermillion mines. If *more* were *done*, and a good deal *less* were *said*, we might have a small amount, at least, of confidence in the ultimate success of mining enterprises in that region of country. We can only wait with patience for the result, and hope that others will do the same, being careful not to get themselves into a position where they will be obliged to subsist on simply "tests" and "great expectations."—[ED.

The following is the report: When starting from St. Paul, from all I had learned of the so-called Vermillion gold mines, and from having witnessed some of the great excitements in California and other places, occasioned by such new discoveries as "Gold Bluff," "Gold Lake," and Humboldt Bay," in 1851 and '52, so well remembered by Californians of that day, I had but little confidence in the present or future prospects of Vermillion, especially as gold-producing mines. Upon my arrival, however, I was agreeably surprised at finding numerous quartz veins well defined, which could be easily traced for miles, well arranged in slate and granite, varying in thickness from two inches to ten or twelve feet, each vein on the level surface holding a remarkable uniform thickness as far could be traced, and invariably increasing in thickness at every dip or descent. I also found the veins more numerous than I had ever seen them in the richest mining districts, but all differing in appearance, somewhat, from any I had seen, and still to me, gave the impression that the ores were rich in minerals, the precise nature of which, of course, I was unable to determine, there being no free gold visible even with the aid of the most powerful glasses. I determined to make as careful and examination of the different veins as my judgment would permit, availing myself as much as possible of the benefits of Col. Tindall's process, of which I had heard a great deal, by witnessing its operations, the Colonel affording every facility, and making every explanation I required, in order to satisfy myself, though not pecuniarly interested (except in common with the people of the northwest,) not expecting to be called upon publicly to express any opinion in relation thereto. I visited several veins said to contain silver and gold. Among others I examined the Minnesota Gold Mining Company shaft (fifty-two feet deep,) and the Tindall vein, on Minnesota Point, the George B. Ryerson, Martin Ryerson, Charles H. Oakes, R. H. Foss, and other veins belonging to the Vermillion Lake Mineral Land Company, of Chicago, on Ely Island. I also examined quartz from numerous other veins both in the old, and what is called the new district, (ores from the latter having a still richer appearance,) and as I have before stated, the metals are completely concealed, and had it not been for the information afforded me by Col. Tindall's process, by witnessing its operation and seeing the results, should still have remained in ignorance as to any certain value the mines possessed. On account of the giving out of the furnace, with which the Colonel was operating, myself as well as others, did not have as full and satisfactory opportunities of witnessing the workings of his process in all the different veins as was desired. The New York Gold Mining company had quartz on hand (believed to be very rich,) from Scott Island shaft, seventy-two feet deep, which the Colonel could not work, and some were very anxious to see the rock from the Tindall vein on Minnesota Point tested, as it was the impression that the ore also contained a very large amount of precious metals—but enough was ascertained from actual observation to satisfy all, that with Col. Tindall's or a similar process, the mines of Vermillion are second to none in point of value, which have yet been discovered, especially if worked by the old process. Col. Tindall's process appears to be very simple, and is, no doubt, a wonderful invention, as much so in its simplicity as in anything else. One of his furnaces, capable of desulphurizing two tons of ore in twenty four hours, will not cost to exceed $200. The chemicals which he uses I am told are not expensive, costing not over $1 per ton of ore. The rock, after being pulverized, is put into the furnace and subjected to intense heat; while the baser metals are being carried off, the precious metals, by the use of his chemicals, are held in chloride, after which the contents of the furnace is drawn off into a vat prepared with the chemicals, which brings the chloride into a metallic state, so thoroughly desulphurized, that the quicksilver will readily gather it up. It is then put into the amalgamator, and then follows the usual method of separating the amalgam from the metals, etc. Small parcels of quartz from three to 300 pounds were tested and separately ascertained the amount each parcel contained of gold or silver, and invariably the further the rock was taken from below the surface, the richer the vein, the veins always increasing in thickness as they go down. The following are a few tests made by Col. Tindall while we were there and I believe may be considered about an average yield of the principal veins when suitable machinery and experienced miners shall have been employed in working them:

Minnesota Gold Mining company's vein on Minnesota Point, shaft 52 feet deep, produced, per ton, in bullion	$100 00
Empire Lode, Pine Island, per ton in gold and silver.	86 00
Banta Vein, Minnesota Point	58 00
Watertown Co's Vein, New District	89 20
Chicago Co's G. B. Ryerson Vein, Ely's Island	56 23
One of the New York Co's veins on Ely's Island	212 40
Chicago Co's R. H. Foss Vein, Ely's Island, principally gold	243 60
Buckeye Lode, Pine Island, gold	126 66
Capt. Mullen's claim, New District, three lbs, (probably selected,) in bullion, 2 pwts. and 3 grs.	

It was the intention to have tested other veins of the New York, Chicago and other companies, but his furnaces gave out, much to the annoyance of all concerned, and especially to the Colonel himself, as he informed me that there were some veins not worked which he desired most to test The machinery used for making these tests was a three-stamp mill belonging to the New York company, and the only mill at Vermillion. The stamps are light but good, the dies poorly set, and the foundation bad—only 500 or 600 pounds of rock can be crushed per day. The amalgamators were fair, but taken altogether could not, in its present condition, be considered good machinery for even testing ores. I am informed that a 3-stamp mill, to be run by water, will be set in motion at Vermillion this fall, expressly for the purpose of making further tests, for the accommodation of all. I am also informed that some of the companies intend getting machinery for working the mines on a larger scale, as far as the head of Lake Superior, this summer, so as to get it into the mines early in the winter. Gulch or placer digging has not yet been discovered, although the "color" (as it is called) has been found in some places. Capt. G. B. Ryerson, of Chicago, an old miner, has succeeded in finding the "color" on Ely Island, but, from the nature of the ores generally, I am of the opinion that gulch metals will not be found in any very great quantities; (in this, however, I would be very much pleased to be mistaken.) It will, therefore, require a good deal of capital to work the mines. The ores are hard, and, in my opinion, will be somewhat expensive to work, no doubt more so than quartz generally, and will require the best machinery. I am of the opinion, however, that with Watson's Crusher and Pulverizer, or similar machinery, the cost of crushing, pulverizing, and extracting the metals cannot exceed $10 or $12 per ton. It does not follow, as proved conclusively by the working of Colonel Tindall's process, that because the precious metals are so concealed in sulphuret that not a particle of free metal can be seen by the aid of powerful glasses—that such ores do not contain even a much larger amount of gold or silver than much of the quartz in other mines where free metals can be easily seen by the naked eye, in fact the most profitable ores in Vermillion will no doubt be found more completely concealed in the sulphurets, and I know no reason why such should not be the case in other mines with the same facilities for desulphurizing the ores. In much of the rock tested at Vermillion it was not believed that they contained much of value, and yet in some instances the Colonel himself has exhibited as much surprise as any one, as to the results actually obtained from the different kinds of ores; even the most experienced miners (and especially from the Western gold fields) would not be likely to understand the nature of the formations and the different kinds of ores. The white quartz, from what is called the Buckeye vein, on Pine

Island, supposed to be as rich as any discovered at Vermillion, very much resembles some of the richest gold-bearing veins of California and Nevada. The other kinds of ores containing gold and silver may be said to resemble the ores of Montana, but, taken as a whole, the general formation of differs widely from any of the mineral regions west of the Missouri river. The iron gray and cinnamon-colored quartz, more resembling fine granite in appearance, and which may be called granulated quartz, is believed to contain much more of the precious metals than any of similar appearance in any of the Western mining districts, and it is believed will prove as profitable to work as any of the ores of Vermillion, notwithstanding the larger yield of other veins. There appears to be no doubt that while the veins increase in richness the farther they are worked below the surface, they will pay on the the surface, in fact all of the tests except one or two were made from rock entirely on the surface.

Colorado.

One of the editors of the Rocky Mountain *News* is journeying among the mines of the Arkansas Valley, and is writing thereof in his paper. We clip from several of his letters the following items of mining news, regretting that lack of space will not permit us to print them entire. Of some of the prominent mines and mills of Park County the writer says: "Twelve men are now engaged preparing the site for Mr. Tappin's ten-stamp mill, which is by this time on the ground. If it will pay as expected, twenty more stamps will be added immediately. Mr. J. W. Smith, of this place, is also erecting a ten-stamp mill there, taken over from Musquito. Other mills will follow soon, if the quartz proves rich, and the lodes true fissures, of which, from the richness of the gulch, there can be little doubt. There is but little doing in quartz in Park County, placer mining taking everybody's attention. Dr. Harlan, for a Pennsylvania company, is running a twelve-stamp mill at Musquito, making it pay. Mr. Nelson Newlin is working an arastra or two at Buckskin, on tailings from the milling of 1862, making from $150 to $200 a week. Captain Bates is runaing four arastras at Buckskin, with what success we didn't learn. Mr. Morse, for Prof. Dubois' old company, is mining with a small force on the Excelsior, and that is about all that is doing in the Park in quartz. Judge Spicer, in Pollock district, has once started a fifteen-stamp mill on the old McCullough property, but had to stop to rearrange in some way. He is doubtless running again by this time. Miners are at work on the Ten-Forty at Buckskin, and the discovery of that rich deposit of silver ore has largely stimulated prospecting in the vicinity. It will be remembered the first great silver excitement we ever had was in reference to Quandary Mountain, not far from Buckskin. Having learned more about silver rock and ores these latter years, perhaps the country round Mt. Lincoln might again be prospected to advantage for silver".....Writing of Granite district, mention is made of the Treasury Mining Company, of Boston. The writer says: "This organization was formed last winter by Mr. W. B. Felton, its present efficient superintendent. The company own three thousand feet on the Magenta, fifteen hundred feet on the Robert George, and fifteen hundred feet on the Equator lode, making in all six thousand feet of property. I know of no lodes which are more admirably situated for profitable working. The Magenta and Robert George run parallel with each other, being between fifteen and twenty feet apart. The Equator crosses the Magenta and the Dawley, which is one and the same vein as the Robert George, but it has been taken up east and west from a certain point under two different names. On the Magenta, at the point where it crosses the Equator, Mr. Felton has sunk a shaft, now forty-seven feet deep. At the depth of fifty feet he proposes to drift each way on the Equator vein, each way on the Magenta vein, and running a cross cut to the Robert George, drift each way on that lode. Up the one shaft, therefore, he will be raising ore from the three lodes. Two hundred feet west, on the Magenta lode, Mr. Felton is sinking another shaft, which is now fifty-four feet deep, and one hundred and seventy-five feet beyond that is a third shaft, now twenty feet deep, but not being worked. In his two shafts Mr. Felton is at present employing five men. The company is also erecting a mill, 24x34, to contain fifteen stamps. It is situated on the west bank of the Arkansas, and will be run by water power. The stamps weigh five hundred pounds each. Mr. Felton expects to have his mill running by the first week in September." Of the doings of others in this district the writer says: "Two mills have been completed this season in the district. Messrs. Hayden & Royal have a nine-stamper, run by water power, and situated on the east bank of the river. Messrs. Smith & Walley are putting up eight stamps on Low Pass Creek, to be run by either water or steam. Their mill building is 24x34, and they expect to be in running order in about two weeks. It is so arranged that more stamps can be put in at any time, and when completed the mill will be put at work on ore from the South American lode. Messrs. Morrison & Partridge's mill now stands on the Arkansas bank, but is to be moved next week on to Low Pass Creek. They have a fifteen horse-power engine, and nine stamps put up. Six more stamps are to be added to the mill. A splendid run was made by this mill recently on ore from the Manhattan and Hattie Jane lodes. The first was from the Manhattan, five tons of which yielded $84, or at the rate of $16 80 per ton; but this is not to be compared with the run of four tons of Hattie Jane ore, which yielded $300, or $75 per ton. The material from both lodes was top quartz. The general course of all these lodes is northeast and southwest, and the width between the wall rocks is from three to five and a half feet. The vein of ore at the various depths given is from one to two and a half feet. I write only of the lodes named above. The only gulch mining being done in Granite District is by the Rocky Mountain Fluming Company, who are putting in a flume, now eight hundred feet long." Telling of gulch mining on Cash Creek, the same writer speaks of the Gaff Mining Co. He says: "This organization is composed of a few capitalists of Cincinnati, who some four years ago purchased a large number of gulch and bank claims with ditches, water rights, etc., and began mining on a large, and I am pleased to say a profitable scale. Besides what they have marked out, they own 7,500 feet of the gulch, together with a large number of bank claims. They began work this spring on the 7th of May, and were until June 27th, engaged in putting their flume down to the bed-rock. Mining was then begun, and from that time until last Tuesday (Aug. 4.) the date of their last clean-up, they have taken out a total of 307¼ ounces of fine dust. The mine is worked night and day, and ten men are employed. Their flume is now 3,000 feet long. Messrs. Bailey & Hutchinson are the efficient superintendents." The writer concludes his series of communications on the Arkansas mining region with some general remarks on its present and future prospects. He says: "So far as the gulch mines are concerned, their richness is beyond dispute, as eight years have tested them. Many of the richest, such as California and Colorado gulches, will continue to pay for years, notwithstanding the large amounts which have been already taken out. New gulches are being opened, and when water can be obtained, and prices and wages come down, many more will also be worked. In Cash creek the Gaff company alone have property enough to keep them working for twenty years at least. There are large amounts of land here which will pay from $3 to $8 per day to the man, now laying idle, which in coming years will furnish profitable labor for the miner, and paying investment for the capitalist. Quartz mining is in its infancy, as the developments in California gulch and Granite districts are not yet a year old. Two mills are only in running order, but before fall, there will be six, two in California gulch, and four in Granite, all of which will certainly be stamping out the gold from their rich free gold lodes. Should the lodes in both of these districts continue to bear free gold, it will be so much the better for them, and for Colorado. But whether they do or not, enough free gold quartz is already opened up to create a period of no little prosperity. After the excitement dies away, and men become calm, this region will enter on a steady and healthful development, and will, I believe, prove second to no mining region in Colorado. The lodes of Granite and California gulch will be found rich, mining profitable, and the yield of bullion increase year by year, adding to the wealth and fame of our fair Territory. Let those whose duty it will be to open these mines avoid the mistakes which other sections have made, and there need be no fear of any coming reactions or dullness. Capital should be used wisely and economically, and labor intelligently directed, and then the mines will demonstrate their own richness, and return steady profits to their owners. The section is an inviting one, and the times promising. Let both be taken advantage of, and there will be no doubt in regard to the mining wealth of the upper Arkansas valley."

.....From files of the Central City Herald to the 25th ult., we cull the following items of news: Col. Tannett intends putting thirty stamps into the mill building of the Rocky Mountain company, at Mountain City. Work has been commenced with the view to their early completion. The stamps will be kept busy on ore from the company's claim on the Bates. He will also put in a line of railway from the mouth of the shaft to extend back to the end of the mill building, where a turn table and dump will be erected. It is expected they will be up and running in ninety days from date of commencement of their erection ...We hear favorable reports from Word district. Nothing startling or astonishing, but the mining interest is healthy and steady. The Ni-Wot company is taking out pay, and are running 25 stamps on ore from the Columbia lode. The Nelson lode is being worked by the Ellingham boys, who have the ore crushed in the Cushman mill. Messrs. Toby & Benson are also working on the Nelson, and have the ore crushed in the Eagle Hill mine. Mr. Bixby is still sinking on the Sucker, and is now 135 feet deep in the shaft; the ore is looking well and assays richer in silver than gold. The Long Peak company's mill is running on ore from No. 9, East Columbia lode, under the management of Mr. J. Graham.....A. K. Brown is working the St. Louis lode on the Gunnell Hill, back of the express barn. He is taking out surface ore which yields 9 oz. 7 dwt. per cord, at the Lexington mill. It has a wide crevice, and yields plenty of ore. The indications in the bottom now show that iron will soon be struck in good paying quantities.....The property recently sold by Mr. Perrin to Mr. Bradley, is being developed by the latter gentleman. He is timbering up two shafts and otherwise improving the property, with a view to more fully developing it. It is situated on the north side of Russell, below the Topeka lode.....Mr. Walker's new 18 stamper is completed and running on ore from the Gregory, for the Consolidated Gregory company. This company is also running the Peregrine mill, 18 stamps, making a total of 36 stamps, which are kept in motion on ore from their mine. This company's new 100 stamp mill has arrived, and is being erected on the site of Lyon's old works, mouth of Four mile gulch .....Smith & Schoenck have leased the King company's 12 stamp mill in Russell gulch, and will be ready to start on the 26th. They now have engaged enough ore to keep the mill in steady motion.....The Georgetown *Miner* of the 20th ult., says: We learn that Mr. Stewart's smelting works are now ready for business. He has been running some lean lead ores for the purpose of filling his hearth, and is now ready to run ore in lots from one ton to a hundred.....Messrs. Huepeden, Walters & Co., have shipped, since our last report, 1380 ounces of silver bullion, coin value $1,498 26. They have been delayed in retorting and melting, which has considerably lessened the amount.

Idaho.

Increased evidence of prosperity is reported in the mines adjacent to Silver City in Oywhee district. Preparations are actively going on for extensive operations which have commenced and will continue without interruption during the coming winter. The Owyhee *Avalanche*, of the 8th ult., briefly notices as follows some of the more prominent undertakings in detail. It says: Whiskey gulch, one of the most promising in camp, is situated on a well-defined belt of quartz, traceable about two miles. Commencing at the Calaveras, on the mountain north of Flint gulch, a line running nearly south, takes in the Whiskey gulch, Whiskey mine, and passes a little to the east of the Allison, which is supposed to be on the same range. Owing to the similarity of name, Whiskey gulch and Whiskey, one is apt to be taken for the other, when in reality they are distinct and separate locations. The Whiskey gulch was the first ledge discovered in Owyhee—being struck in July, 1863. The original discovery consists of 800 feet, of which Geo. L. Story is principal owner. Mr. Story is also superintendent of the mine, and will give it a thorough prospecting this summer. A tunnel has been run 275 feet south on the ledge. A double shaft is being sunk 185 feet from the entrance of the tunnel, and is now down 115 feet, where the quartz is 30 inches wide, with favorable paying prospects. Some of the richest and most beautiful gold specimens we have seen were taken from this mine. In some places the ledge is five and six feet wide. It runs nearly north and south, and dips considerably to the east. The west wall-rock or casing is smooth and regular, the east much broken up and mixed with quartz. Besides being bisected by a number of spurs, several parallel quartz veins dip to the west, from which fact it is evident that these spurs and veins will become identical with the Whiskey gulch, and form one solid ledge.....Mr. Shively has commenced work on the Boomerang mine, and besides prospecting it, he will take out ore for milling purposes. The development of this mine doubtless proves it to be one of the richest in Owyhee. It is located on the north side of Wade's gulch, in close proximity to the Silver Cord, and is supposed to be on the same zone of quartz as the Poorman. A number of cuts have been run across the ledge, and two shafts sunk to a depth of about 12 feet, but no systematic work has hitherto been done on the mine. In some places the quartz shows a width of from four to six feet. Some of the surface rock shown us was literally sprinkled with gold. .....The Ida Elmore mine continues to keep the Lincoln mill in operation. Large amounts of bullion are turned out as usual, although the mine can be worked to greater advantage after the new hoisting works, now on the ground, shall have been in operation. We understand that the new works will be placed on the discovery shaft of the Oro Fino, already connected by tunnel with the New York and Ida Elmore. Being a dry location, where but little snow remains on the ground, it is a much better place, especially for winter, than where the present works are located. A tunnel has been started below the road west of the Oro Fino, and will connect with the New York tunnel and thence directly with the Ida Elmore mine.....The Omega mine is situated on the north side of Wade's gulch, above the Whiskey. A shaft is now down 70 feet on the ledge, which at that depth shows a width of about four feet between the casings. The vein is well defined, but considerably broken up and mixed with granite. Richly paying gold and silver quartz is found. The owners have great confidence in the richness of their mine, and are working night and day. The shaft will be sunk 30 feet deeper, making 100 feet in all, at which depth it is thought the granite between the casings will disappear and quartz take its place.....The Gould & White mine is situated on the mountain a short distance east of the Baxter. Besides having the appearance of good silver ore, free gold is also plainly discernible. Good wages have been made by working it in a hand mortar. A tunnel is now being run for the purpose of more advantageous working. We are informed that it is now somewhat over 50 feet in length, and is soon expected to strike the ledge.....The Whiskey is doubtless a continuation of the Whiskey gulch, and like it inclines to the east. A substantially timbered perpendicular shaft has been put down 86 feet, and at a depth of 90 feet a drift will be run eastward to intersect the ledge, when stoping will commence and large quantities of ore taken out. A new whim has been erected and works admirably .....At the Woodstock rich gold bearing quartz has again been struck in the south drift, 110 feet from the surface A contract has been let for running a drift 60 feet south from the bottom of the north shaft. Work is also progressing finely in the north drift. Smith's arastra at Ruby is now running on the Woodstock ore..... Mose Lyon and party have discovered a mammoth quartz ledge three or four miles to the northeast of Wagontown. It is said to be from twelve to eighteen feet wide, and traceable for two miles. They have christened it the "Avalanche" and have brought in some of the rock for the purpose of getting it assayed .....A contract has been let for sinking a shaft on the Baxter. A whim is being erected and work will commence immediately .....P. Nicholson has completed his contract for sinking a shaft on the Poorman. It is about three hundred feet north of the old hoisting works, and is about one hundred and fifty feet deep. It is well timbered and a magnificent piece of work, twelve feet north and south, in the clear, and five feet two inches east and west. The new hoisting works will soon be here and will be placed at this shaft. A large amount of work is being done preparatory to building a shaft-house, blacksmiths' shop, carpenters' shop, ore-house, &c. In short, Mr. Wallbridge, the very energetic and enterprising superintendent, will soon have the working facilities of this mine arranged second to none on the Pacific coast. In the meantime ore is being taken out, and the Owyhee mill continues to turn out bricks.....Extensive improvements have been made on the Golden Chariot during the past month. A large well-arranged engine-house, blacksmiths' shop, carpenters' shop, storehouse, superintendent's office, &c., have been erected, so that the storms of winter will be no impediment to the working of the mine. The new hoisting works operate splendidly. We descended into the mine and found a large number of men at work taking out ore—stoping and drifting both ways from the main shaft, which is now down one hundred and eighty-two feet, where the ledge is about two feet wide and as rich as ever. The Upper Sinker mill is now running on Golden Chariot ore, and we understand will continue to do so all summer.....Messrs. Peck & Porter are vigorously pushing forward work on the second extension of the Oro Fino. A shaft is being sunk on the ledge, which is from eighteen inches to two feet in width, and yields a good quality of milling ore. A tunnel has also been started and is already in about forty feet. It will tap the shaft at the depth of ninety feet. Quite a large amount of quartz has already been taken out and we hope that this mine will soon be adding its quota to the gold and silver product of Owyhee .....The Oro Fino will soon be in proper shape for taking out heaps of ore. A large shed has been temporarily erected over the engine, which operates finely, and saves a vast amount of manual labor. The Morning Star whistle will soon be heard again, and greatly add to the bullion shipment of W. F. & Co .....The Webfoot mill has been thoroughly repaired and put in good working order. A large vat for saving tailings has been constructed at considerable expense and is a valuable improvement to the mill, which will commence working Woodstock ore in a day or two ..... Work is still rapidly progressing on the Glenbrook mine. We noticed on the dump a large pile of good-looking ore, which will be worked in a few days .....The Oro Fino & Columbia Consolidated Mining company have a notice in our paper of to-day.

Montana.

AFFAIRS AT ARGENTA—NEW MINES BEING OPENED AND FURNACES ERECTED—RETURNING PROSPERITY—COAL MINES, ETC.

Few of the mining camps of Montana have attracted more attention this season than Argenta We are glad to receive continued assurances of its returning prosperity, and to note that it is fast acquiring a healthy, vigorous vitality, which gives promise of rapid and permanent growth. The following letter from the Montana *Post* tells of the progress of events very intelligibly: "Encouraged by the apparent success of Mr. Esler's experiment, several persons have been employed during the past two months in developing interests on two or three of the numerous veins of silver heretofore discovered in the upper district of the Rattlesnake mines. No doubt is entertained here of the richness and durability of those mines. .....The St. Joseph Mining Company have been at work on the Tuscarora. The vein, which has the appearance of a pocket, has been followed to the depth of thirty-two feet, the mineral filling a crevice about eighteen feet in width, that portion of it indicating a permanent vein, varying from eight to ten feet in width. About eighty tons of ore have been taken from this excavation, apparently of superior quality. The company have commenced the erection of their furnace, on a beautiful plateau, on the southeast side of Rattlesnake Creek, a mile and a half above Argenta. The work, under the superintendence of Mr. William Thompson, is progressing, and the furnace will be ready for smelting in six weeks. It will consist of one stack, with two smelters and a cupel furnace attached, fashioned after the furnace erected by Mr. Esler. The works are under the management of that veteran miner, Maj. A. V. Brookie. Half a mile above the furnace of the St. Joseph Company, on the same plateau, Mr. Henry Wood, of Bannack, is erecting a smelting furnace on a new principle, which, if successful, will supersede the means now employed to reduce silver ore. A recent experiment made by him has demonstrated, at least, the practicability of continued experiment, and the furnace he is now putting up will, if successful, be of sufficient capacity for all the purposes of ordinary smelting. By a double draft the flumes are caused to unite over the crucible containing the ore, and the heat thus obtained, in the instance alluded to, was sufficient to smelt not only the ore itself, but the entire structure. The fuel used will be the common green pine wood, and the quality required for a given purpose is incredibly small. The difficulty which now presents itself, but which Mr. Wood expects to overcome, is in finding crucibles sufficient to withstand the heat. By an ingenious arrangement he will be able to desulphurize the ore preparatory to smelting. If this new invention succeeds it will reduce the expense of working ore at least one-half. Great confidence is expressed in its ultimate success by the old miners of the district. Mr. Andrew Murray has purchased the Esler furnace, and intends hereafter to use it for working several valuable lodes of his own. I saw at this furnace yesterday nine tons of metal, the result of a run of fifty tons of miscellaneous ores, which had been smelted in eight days from the time of commencement. This metal will probably yield fifteen or twenty pounds of silver to the ton. The process of cupellation, which will occupy a week, more or less, commences to-morrow. Want of machinery to make speedy preparation for cupelling, and the necessity for slow and tedious hard labor, renders this process, at present, tardy and expensive, but these difficulties will be overcome by the energy of the smelters, and the positive encouragement they now meet with. The work on the Anaconda, under the direction of Mr. Cotney, has been pushed forward with energy, and the lode, at the depth of sixteen feet from the surface, presents a vein of fourteen inches in width of mineral, which has every appearance of

great richness. This lode has been worked through a surface layer of hard lime rock, five feet in thickness, for a distance of sixty feet down the hillside to its present vertical descent into the earth. The vein is seemingly permanent, and traceable for several hundred feet upon the surface. It has already swallowed up the discovery of one lode, and from present indications will monopolize several more. The workmen have now reached a point where the ore can be released with less labor and expense, and in remunerative qualities. They have taken out about eighty tons of select mineral, a portion of which will soon be tested. They are now engaged in securing their shaft. Work, for the present, is suspended on the Stapleton, but will soon be resumed. The recent test at Esler's furnace proves it to be one of the richest lodes in the district, and the vein, at the depth of one hundred feet, is five feet in thickness, and the ore of superior quality. The company interest on the Legal Tender was recently purchased by Messrs. Nowlan & Weary. Mr. Esler is at present engaged in developing the lode. It is well known that no vein in the district has afforded ore equal to it in richness. Many of the lode owners are hopeful of being able to erect furnaces within the next three months, but these enterprises, being mostly of an individual character, or entertained by local companies of small means, it is impossible to say how many of them may be realized. Deficiency of means is the great obstacle. Confidence in the mines, in the permanency, and in the means devised for working them, is on the increase daily; and no one is either anxious to sell or to interest Eastern capital in their development. Very little of that excitement, which affected our people in 1863 and 1864, exists now. They look upon quartz mining as a pursuit, and to a fair percentage for constant toil and economy, as its highest reward. When prices fall, as they must, this district will be developed by the people of the Territory, and no thanks to outsiders. Two miles below the town several citizens are now engaged in opening a coal bed, which promises to be of good quality and considerable extent. This, should it prove equal to expectation, will supersede the charcoal, and greatly reduce the expenses of smelting. Argenta is favored with everything in the country around it needful to render the working of silver more economical than at any other point in Montana. Good fire clay and fire stone for furnace linings in abundance, iron rock and native litharge for fluxing, and the beautiful Rattlesnake creek affording, every eighty rods of its descent from Bald Mountain, water power sufficient for all purposes. The magnificent valley of the Beaverhead, chequered with abundant crops of wheat, oats, potatoes, etc., and affording food, both winter and summer, for countless herds of cattle, spreads away to the front of the town for many miles, to the base of the mountains. Should the contemplated railroad from the Central Pacific to Oregon be constructed, it will necessarily cross the Beaverhead valley within a few miles of the Argenta mines, and thus afford a cheap and expeditious transportation for the mineral, in bulk or after reduction, to either seaboard. The citizens cannot encourage any enterprise from which greater or more speedy advantages will be derived. Its facilities will reach all classes of our citizens, and tend to the rapid development of all our great and multiplied resources."..... A gentleman from Silver Star district says that the works of the Aurora Smelting and Mining company are rapidly approaching completion, and will be ready in a few weeks to smelt ore from the Richards, Turtensbaw, and Gunnison lodes, located in the above district. Mr. Rompf will have charge of the furnace when completed.... Mr. Rea, from Phillipsburgh, reports that the mill of the St. Louis and Montana mining company, recently cleaned up $3,000 in bullion, the result of a run upon thirty tons of rock from the Hope lead. Three hundred tons of a similar quality is already on the ground, and will soon be crushed. Work upon the Rumley & Bugher ledge, he says, is being actively prosecuted, and rich returns from it are expected as soon as the crushing of its rock shall be commenced..... The Virginia City *Democrat* says that the Postlewait's mill, at the Summit, in a run of five days, extracted 71 ounces of gold bullion, worth about $20 per ounce, from the rock of the Keystone lode.

Nevada.

The Comstock.—The total receipts of the Crown Point company for July was $145,570 55, and disbursements $79,000. Up to the 11th, the receips on August account amounted to $29,000. .....The Virginia City *Trespass*, in its mining market review for August 15, says of the Savage mine and its stock: "Savage has been heavily dealt in at steadily declining rates, opening at $127, dropping to $124 50, declining to $109 50, then to $106 50, and closing at $110 50. The decline is attributed to the caving of the third station, which occurred about the middle of last week, but was kept from the public until Tuesday last, when we gave an account of it in the *Trespass*. On Monday the stock opened at $127, advanced to $129, and closed at $127—516 shares changing hands; which fact would seem to indicate that the sellers of so large a number of shares had been given to understand that something was wrong, while the buyers were profoundly ignorant of the disaster. On the day of our publication of the fact, only 149 shares changed hands, opening at $116, declining to $115, and closing at $114 50—a fall of $16 50 per share—an aggregate decrease in the market value of the entire mine of $264,000. The confirmation of our statement (which was believed by many to be 'a sensation,' a disreputable article in which we do not deal, touching any matters of public concern) by the subsequent publication of the report of the superintendent, sent the stock down to $109, and a fuller statement of the touched at $106. It is now believed, however, that the giving condition of the cave was given by us on Thursday, when the stock way of the fourth station, under the weight of the cave from the the third, can be arrested. An unusually large number of the heaviest timbers have been placed in position, and the sinking of the fourth section has been checked, and drifts are being run around the mass of earth to reach the ore cut off by the cave, and it is believed that everything will be secure and the mine in condition to yield the usual amount of ore within four or five days."..... The same paper says of the Sierra Nevada: "About 3,400 tons of ore are now awaiting the stamps, and 50 to 60 tons per day are being extracted. The new 20-stamp mill of the company will be ready to start on Monday. The ore from the mine is dumped from the car at the batteries, and the same engine will do the hoisting and also drive the machinery of the mill, so that the rock will be mined and milled on a cheaper scale than ever before known in the State." At the Hale and Norcross mine it continues; but little actual mining is going on, and few men are employed, mostly in running cuts to furnish air, the heat being intolerable.

Pahranagat.—A private letter dated at Logan Springs, kindly placed before us by a gentleman of this city, informs us of the flattering success of Mr. Woodhull with his smelting works. The writer continues: "Mr. Woodhull left immediately after the test, in company with Mr. Sherwood, for Chicago, to consult with the company which he represents, for the erection of works on a larger scale." [If Woodhull's process possesses all the merits claimed by newspaper correspondents, it is a great thing for Nevada. Unfortunately the accounts given are so *very* flattering that we cannot help distrusting their entire accuracy.—ED.]

Humboldt.—The Unionville *Register* reports bullion shipments as follows for the week ending August 1: The Montezuma company, $30,000; the Golconda mine 389 pounds—value, $4,688; Fall & Co., per Wells & Co.'s Express, 2,800 ounces.

Arizona.

Late Arizona advices state that heavy rains prevailed in that section. In the latter part of July, a waterspout occurred in Yuma county, doing great damage. Two freight trains were destroyed. The mail carrier between Lopez and Prescott lost his mails in the flood. The Indians are committing depredations in the neighborhood of Wyckenburg.

Canada.

THE SILVER MINES ON THE NORTH SHORE OF LAKE SUPERIOR.

The Lake Superior (Mich.) *Miner* has a lengthy account of a recent trip to the Canadian silver fields on Lake Superior, from which we make the following extracts relating to the mines. On the morning of August 5 the writer, with a party of gentlemen, proceeded by steamer to Fort William. Continuing, he says: "The following morning, notwithstanding the fresh breeze blowing and heavy sea on, the majority of the party started down the bay in a small boat to visit some of the silver mines, they being situated, the Withers Mine four and a half miles below the fort, and the current River Mine six miles below. But three and a half hours were consumed in rowing down to McVickers Creek, where we hauled our boat up and started for the mine, it being situated some three miles back in the woods. A road has been cut so that the traveling was comparatively easy. It was generally remarked that a better grade could not be found than was here given to this company to build their road."

THE SILVER MINES.

"The Withers Mine is a corporation regularly organized and composed mostly of American gentlemen—men with capital and energy, who are desirous of proving the value of their property. They have already sunk a shaft below the first lift—some seventy feet in all—and produced remarkably well in silver, as well as in other minerals, iron, &c., but the liberal (?) policy adopted by the Canadian Parliament was too much for them, and all works were stopped about the middle of May last. Since that time nothing has been done, as the company do not consider that they can afford to pay into the Canadian treasury the large percentage of the yield that their law now requires." [No royalty is now exacted by the Canadian Government.—ED. JOURNAL OF MINING.] "The Thunder Bay Mining Company are now working but one mine, which is situated back from Current River some two miles. They have here employed thirty miners, under the superintendency of Mr. McDonald, a native of Scotland, imported to take charge of these mines. He has given the property he is now at work on the name of Ben Cruachan, in honor of a mountain in Scotland. The results of this mine have been of a most successful character, having shipped considerable silver in its native state last spring, although at present the vein is looking poorly and producing poorly. New machinery for the stamp mill has been purchased, and is now at Current River. This machinery is very similar to our stamping apparatus used for stamping copper. We discovered, on inquiry, that the regular price of labor for miners is $24 per month clear. This, it must be remembered, is in gold. Counting exchange, price of board, &c., it makes wages about the same as on the south side of the lake. The opening made at Thunder Cape shows a fine vein of silver, and may eventually prove to be *one* of the silver mine locations on the north shore, although it is contended by some that such a result cannot be expected, as length of vein is not to be had on this comparatively small tract of land. Relative to the silver interests generally much has been said; the praises of the Canada silver fields have been highly sounded; or the actual merits we do not pretend to speak. Our inexperience relative to silver lodes does not permit us to condemn, because we could not *see* the silver. It may be there, and as long as those who are supposed to know *say it is*, and shipments of the valuable mineral have been made, we are willing to accept and adopt the theory that such is the case, and therefore have written accordingly. Mr. Rudolph, of Ontonagon, has declared that the veins now being worked are champion lodes of the country and true silver-bearing lodes. Gentlemen of the party were well satisfied. This, therefore, must be our authority for saying that eventually those regions must become great for mining."

COPPER.

Michigan.

The Portage Lake *Gazette* publishes the following products for July: Franklin mine, stamp, barrel and mass, 75 tons, 260 lbs.; Pewabic mine, stamp, barrel and mass, 57 tons, 536 lbs; Shelden Columbian mine, total, 23 tons, 069 lbs. The amount of rock stamped in the Calumet mill from August 1 to 12th inclusive, was 1986 tons, 1800 lbs., which produced of stamp mineral 65 tons, 188 lbs. The July product including barrel copper, was 134 tons, 134 lbs. The Hecla product from August 1st to 15th inclusive, was 98 tons, 1035 lbs., the yield of 2224 tons of rock stamped. From the same paper, dated August 20, we learn as follows as regards the mines: Within the last three days two more new veins have been cut in the exploring trenches of the Isle Royal and Shelden-Columbian, one on each property. That on the former is nearly two feet wide, and is said to show more coarse copper than the one spoken of last week. It occurs between good looking belts of amygadloid trap. The one opened on the latter property is a spar vein of from 14 to 16 inches in width, but so decomposed in its outcrop that but little can be said of it .....The earnings over and above the cost of operations at the mine during the month of July were about $2,500. With the present very low price of copper, it is particularly gratifying to know that the Huron is so carefully managed as to earn even a small profit. In anything like fair times we now have evidence that a fair dividend would easily be earned. Mr. W. L. Hulbert, the popular clerk of the Huron, for the last two or three years, has resigned his position..... The engine and machinery for the new Schoolcraft stamps has arrived, and will soon be taken out to the mine. The stamps will add another to the already large number of varieties now in use in the country, and may or may not be superior to others of their class. In construction they nearly resemble Wise's stamps now in use at the Phoenix, inasmuch as they are set up in batteries of five heads each, and each battery worked independently of the others. But the arrangements for driving are quite different. Instead of each battery being driven by an independent engine as in Mr. Wise's plan, the entire mill of the Schoolcraft is driven by one low pressure engine, which will turn one main shaft set a few feet back from the stamps. Each battery has, besides, a propelling shaft for it alone, having but one cam for each head, to be driven by belting from the main shaft. The arrangement has, in common with Wise's stamps, this advantage—if there are any alterations, repairs, or stoppages necessary, only the battery in which they are required need be stopped, while the balance of the mill can continue at duty. The new mill is to be located on a small stream that crosses the property but a short distance from the mine works. Of the capacity of this stream we know but little beyond the fact that it is quite small, though probably sufficient for present purposes. Reports of the appearance of the mine works are encouraging, the openings progressing finely..... The Ontonagon *Miner* of the 22d ultimo, gives the Rockland product for July: 4,273 lbs. band copper, 11,555 lbs. stamp, 488 lbs. mass—total 8 tons 316 lbs. Of the Superior, 2,932 lbs. stamp, 150 lbs. mass—total 1 ton 1,082 lbs..... The same paper says that the water is entirely removed from the Aztec mine and active mining operations have commenced. A fine show of copper has been exposed on the Evergreen Bluff vein, a mass of copper is in sight, a portion of the one cut off when operations were stopped last year. The force employed number nine miners besides three boys..... The appearance of the Ogima mine is good. A large amount of stamp rock is being constantly removed, both from the old vein and the new. As depth is attained on the new vein, the copper grows heavier and richer, being more confined. Perceptible work is being accomplished. The stamps are kept employed only about half the time on account of the small force employed, as the total number of miners is only 26.

California.

A telegram from San Francisco says that the copper mine located at Copperopolis, Calaveras county, was sold at sheriff's sale in that city recently. Messrs. Gidden & Williams, of Boston, were the purchasers, at $121,250.

MISCELLANEOUS.

California.

An Amador county paper says: James Ruth has discovered a vein of steatite (soapstone) on the ranch of Van Dusen, near Newtonville, of great purity, and in large quantity. The veins of soapstone in the mountains above, usually contain so much iron as to be nearly useless for building purposes. This vein is without iron, uniform in color, and of fine texture, and easily worked.

China.

MINERAL DISCOVERIES—GOLD, SILVER AND COAL.

It is no longer a matter of doubt that the Celestial Empire is rich in precious and economic minerals. The following clipping from the special correspondence column of one of our city exchanges, shows the revelations that are now being made, and, at the same time, hints at developments that, under the auspices of Ross Browne, Ex Mining-Commissioner and present Minister to China, are more than likely to be brought about. The report runs thus: "For some time past rumors have been gathering thick, that gold and silver mines have been discovered close to the open port of Chefoo, in the north of China, (latitude 37 degrees 35 minutes 56 seconds north, and longitude 121 degrees 22 minutes 33 seconds east.) Hitherto, except as a sanitarium during the hot summer months, Chefoo, the most salubrious of our open ports, has been but little visited. Its trade is not extensive, consisting chiefly of cereals, pulse, tobacco, drugs, &c., together with a peculiar description of silk obtained from wild silkworms, which feed on the leaves of the oak and other trees; but the staple articles of the trade in so far as Europeans are concerned, are beans and bean cake, for the shipment of which merchandise to southern markets Chefoo is the principal port. The silver mine now discovered is situated but a very short distance from Chefoo, some fifteen miles or so, in a southwesterly direction; the gold mine is about one hundred and twenty-five miles further in the interior. Several foreigners have already visited this locality, and report favorably on the ease with which they could be worked, if the Chinese would but sanction the undertaking. Our community here numbers several who have had experience in California mines, who are snorting like war-horses, impatient to be off there. They have despatched one of their number on a prospecting tour to report progress for them, and an advertisement in a local journal for five hundred picks and shovels begins to look like business. The latest news from the locality is that upwards of ten thousand Chinese, impatient of restraint, have, on their own responsibility gone to work in the gold mines, and defied the authorities by threatening to turn rebels, if they are interfered with. These mines will doubtless bring China and California into closer contact, and I fully expect to see an army of your diggers revolutionizing this old empire. I trust, however, they will not act too hastily, for to arrive here before formal permission to work the mines has been accorded, would be little less than ruination. Those interested in the subject would do well to keep an eye this way. Next in importance, and in some respects of even greater importance than the gold and silver mines I have alluded to above, come the coal fields of China. To open these also to foreigners a desperate effort has recently been made, resulting at present, however, in nothing but failure. The coal mines nearest to us are situated near Chinkiang, one of our open ports on the Yangtse river. These, the British Consul, Markham, used his best endeavors to induce the Viceroy of Nankin to open at once, but unsuccessfully. The importance of a coaling station so close to Shanghae, the Liverpool of the East, and in the track of our magnificent fleet of steamers that navigate the Yangtse, is most obvious; but the officials among whom we are doomed to live will not grant us the slightest assistance. Consul Markham has been removed to Chefoo, where he can transfer his attention from coal to gold and silver, and Chinkiang, as far as British interests are concerned, has been reduced from being the seat of a full blown consul to that of an off-shoot of the Shanghae Consulate, in special charge of a consular assistant only. No sooner had the Chinkiang coal bubble burst, than whisperings of northern fields, easy of access from Tientsin, the northernmost of our open ports in China proper, were wafted to our willing ears. Steamer after steamer confirmed the glad tidings that not only was there coal in plenty, but that permission to work the mines would, under certain conditions, be accorded to foreigners. These hopes, like the others, proved futile. Native experts are appointed by the Tsung li Yamun, or Foreign Office, to report on the feasibility of making a good cart road from the Chaitang coal mines to Tientsin, the result being announced by the British Consul Mongan to those interested in the following terms: "The road cannot be made according to the report, first, on account of engineering difficulties; secondly, because the local popular feeling is against it; and thirdly, because its construction would injure the Fungshui. It might be shown, perhaps, on the other hand, that the engineering difficulty is surmountable and the popular dislike is only partial, but the Fungshui argument is unanswerable, and the third objection therefore is insuperable." With the powerful Fungshui argument brought to bear against the opening of the Chaitang coal mines, you can fancy the difficult position we stand in; but one would fancy a British Consul in the nineteenth century would have some better course to pursue than, Turk-like, to accept his kismet, and pronounce Fungshui argument insuperable. That the road is practicable foreigners who have already prospected it are thoroughly convinced; the mines are situated at a distance of sixty-five miles almost due west of Pekin. They are even now worked by Chinese to a certain extent though camels being the only mode of transport, and from one hundred and fifty to four hundred pounds forming a load, it cannot be delivered in Pekin at a smaller cost than from $14 to $17 per ton. The ill-will of the people is an argument often raised to prevent the innovations proposed by foreigners; if traced, however, to its source it would almost invariably be found to be a mere excuse of the officials. If our ministers bring a necessary pressure to bear on the officials at the capital promptly, the opening of the Chaitang mines to foreigners will soon be *un fait accompli*. The British, however, are far from sanguine. At this crisis the advent of our new minister, J. Ross Browne, is by all parties anxiously looked for. Coming from a mining State as he does, and personally acquainted from actual experience as commissioner to report on your mineral interests, we confidently hope he will prove to be the "right man in the right place" to develop the great mineral resources of this

vast country. Whilst on this subject I should also mention that among other minerals discovered in this empire some specimens of graphite have been received from Mr. Sands, the American Consul at Chinkiang, which, on being analyzed by Dr. Macgowan for the Taontae, have proved to be as valuable as that of Brazil, being almost pure carbon, having but a trace of iron in its composition.

Michigan.

THE IRON AND COPPER MINES OF LAKE SUPERIOR.

HOUGHTON, MICH., Aug. 17, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

In making a flying trip to the Lake Superior region from Chicago, I went via Milwaukee to Fort Howard, and then took the steamboat on Green Bay for Esconawaba; then the railroad to Negaunee, where, but one-fourth of a mile from the depot, the Jackson Iron mine is situated. Ample time was given me to examine the collossal mass of red hematite, the like of which is but rarely seen. The hill where the iron was first dug out is about 100 feet high, and the shaft from the level is now 70 feet deep. The iron ore is one solid mass, so far, and probably hundreds of feet farther down, the same massive deposit of ore may be found. The ore is melted at the Iron Cliff and Pioneer furnaces. Thousands of tons of the ore are carried on the cars to Escanaba, where I saw a number of vessels taking in the same as well as the pigs, which are sent down to the eastern market. The ore is brought in the same vessels to the Lehigh Valley, where they receive again a return freight of coal, which is sold at a cheaper rate than in New York. Arriving at Marquette at eight o'clock, we started in a steamboat along Lake Superior for this place, via Portage Lake, Bootjack Bay and Torch Lake. It was a fine starlight night, the boat heading westward from Marquette. I beheld a northern light in full splendor; a great number of streaks of light moving continually from the zenith to the horizon, which lasted for nearly an hour. This phenomenon was accompanied by another one, which was that of a star falling down a great distance, and when about 30° from the horizon, it expanded to the apparent size of the moon, and then disappeared. When near Houghton, the sun reflecting upon the water, rainbow colors could be seen for a great distance upon the surface, which was said to be owing to the copper carried away in the tailings from the several stamp mills situated in both towns. This is probably the case, for close by the town the water looks quite red from the waste of ores washed away from the mills.

Stages leave this place daily for the Cliff, Eagle River, Ontonagon and Copper Falls. It being but twenty-five miles distant to Eagle River, I started in one of those vehicles. After ascending about 600 feet, I met the first large copper mine on the right side of Portage Lake. It was the Quincy copper mine. This mine, when in operation, employs many hundred hands; turns out 100 tons of stamped ore monthly, and owns nearly one thousand acres of land.

There are twelve stamp mills about Houghton and Hancock, all situated on the water, and the ores, when mixed, are carried down on inclined planes to the works. Next to the Quincy Copper Mine we pass in our stage journey the Pewabic, and then the Franklin, both of them in full operation, and yielding from 90 to 100 tons of copper per month. All these mines yield for the greater part native copper in the amygdaloid and conglomerate; and I was told that a mass of 17½ tons weight of native copper was taken out of the Quincy mine. On the same route we meet the Pontiac and Dorchester mines, which are not in operation; next to these comes the St. Louis mine, with 200,000 acres of land, owned by the Sault St. Mary's Company; next we pass the Boston and Albany, the latter is being worked upon tribute, the owners receiving one-fifth of the product. They only get out about 20 tons per month and are down 500 feet. The Rhode Island, the Dove: and Osseber mines come next, but are not working at present.

We next come to the Hecla, where I stopped and addressed myself to Mr. HARDIE, the Superintendent, who accompanied me at once to the shaft. The mine is but a year old and has yielded about 4,000 tons of copper rock. This is forwarded by a railroad a distance of five miles, to the river, where it is stamped and washed. It is then packed in casks and sent to the furnace to be run into ingots. One hundred and fifty tons of ingot copper were got out last month. The copper comes in a very hard conglomerate rock. A large mass of the rock was brought up from the mine weighing somewhere from two to three tons, which was crushed to pieces at one stroke of the triphammer. This, on examination, was full of reguline copper of some 30 or 40 per cent. metal. The Hecla employs 150 hands, and a 6-inch pump keeps the mine clear of water. They are down 270 feet with two working shafts. The village of Red Jacket, containing several hundred families, sprang up since last year. The copper occurs here in a twelve foot vein which runs along the whole property of the Company, which is nearly 1,000 acres (one and half section). The Calumet mine is the next one that I examined in company with its manager, Dr. Agassiz, who kindly imparted to me much information. The Calumet has been opened two years, and is already at a depth of 240 feet. Four shafts are built, while work is now going on between the first and second level, A large powerful engine is at work in order to raise the ore by means of a wire rope. One hundred and fifty men are employed at the mine. Four thousand tons of copper ore from the Calumet are stamped monthly, which require very powerful machines. The battery gives 85 blows per minute, so that all the ore is stamped to dust and washed from the water of a thirty-four acre pond.

The Hecla and Calumet copper mines are owned by the same corporation, and five individuals control them both, but the organizations and their accounts are kept separate, The amount spent on the Hecla is half a million of dollars, including the amount of $120,000 paid for the land, and the large outlay for the railroad. The amount spent on the Calumet is $360,000; $60,000 only having been paid for the land. I returned in the afternoon by the same stage to Hancock, and crossed by ferry boat to Houghton, where I went one mile back to visit the Huron, which is a celebrated mine, having the best arrangement in Lake Superior for draining. She raised in July 85 tons of 80 per cent. stamp copper. The gangue is an amygdaloid rock, but the mineral is found principally in epidote. The mine has been vigorously worked only for the last four years. The force consists of one hundred miners who are getting out 3 tons of 80 per cent. copper. The average per centage of rock raised is but 1½ per cent. mill rock. The mineral is raised by a hoisting machine connected by means of friction gearing with an engine of 26 inch cylinder, of 30 inch stroke, and 80 horse power. The hoisting shaft is 525 feet deep, and the second level is open to over 2,000 feet in length.

The stamped and washed ore from the Huron is smelted and run into ingots at Hancock furnace. I did not go to the Cliff mine, which is but seven miles distant from the Calumet. The Eagle River mine is but twelve miles from the Calumet.

As far as I have had occasion to examine and reflect upon the condition of the copper mines at Lake Superior, I feel satisfied that, although mining at the present moment is not very remunerative, the time is not far off when Lake Superior will produce 300,000 tons of copper; enough to supply not only this country but also England and France, and that, too, at a cheaper rate than Chili can afford to put the metal into the European market, for, at 13 cents per pound for refined copper, no competition can come up.

Some of the old mines of Lake Superior, like the Cliff mine, which has produced thousands of tons of copper, do not pay now to work profitably; the mine is 1,600 feet deep, and much below the level of Lake Superior; but, as far as I have observed, most of the mines are situated on very elevated ground, so there is plenty of opportunity to develop by a system of adit levels. Iron mining appears to be more flourishing than copper, judging from the number of mines and furnaces in operation around Marquette, from whence 300,000, or, perhaps, even a half a million tons, will be exported the present year.

LEWIS FEUCHTWANGER.

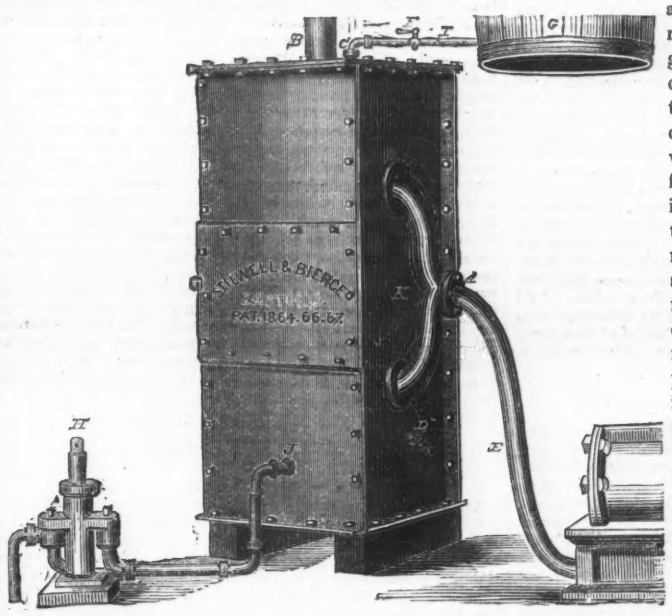
Manufacturing and Mechanical Notes.

No XXX.

Stilwell's Patent Heater and Lime Catcher.

Steam, from its multiplied applications, has become, throughout the civilized world, an indispensable agent; hence the vital importance of the question, "How can the use of steam be rendered safer and more economical?"

The many serious difficulties attending the use of steam are well known to all who have had any experience in the use of the steam boiler. We will not stop to consider all these difficulties, but only the *most serious* of them all, which is the formation, in steam boilers, of what is commonly known to engineers as "*scale*" or "*incrustation*"—a hard substance formed out of the earthy salts contained in the water, which attaches itself firmly to the whole inner surface of the boiler.



And we need not stop to consider the great destructiveness to the boiler, loss of fuel, frequent and expensive delays in cleaning, and not unfrequent explosions, all arising from the presence of this "scale," as these facts are too well understood by all who use hard or mineral water for steam purposes; but we wish to simply state a few well known *facts*.

Experiments by the most competent and scientific engineers have established the fact that "scale," being a non-conductor of heat, the presence in a boiler of *one-sixteenth of an inch* of scale, is equal to a loss of about *fifteen per cent.* of the heat in fuel. The plates of a boiler never get hotter than the water when it is in contact with them, whatever may be the outside temperature, and the water never gets hotter than about 330° under a pressure of one hundred pounds. If boiler plate could be kept clean, it would last for years; but when coated with "scale," and thus removed from direct contact with the water, the plates soon become so over-heated as to deteriorate in quality. Explosions frequently occur by the cracking of this scale, and allowing the water to come in sudden contact with the over-heated plates.

To remove this "scale," many expedients have been resorted to in the shape of powders, etc., but they are oftener worse than the scale itself, being largely composed of acetic acid, the effect of which on the boiler and valves is most pernicious. Every one acquainted with the subject will admit that it would be much better to remove from the water all foreign substances, which form scale, before the water passes into the boiler, and thus prevent entirely the formation of any scale by supplying the boiler with pure feed water. To accomplish this is the object of Stilwell's Patent Heater and Lime Catcher. The apparatus consists of a square or cylindrical iron box, through which is passed the cold water from the well, and also the exhaust steam from the engine. By its peculiar construction every particle of water is acted upon by the steam in such a manner as to thoroughly decompose it, and at the same time the water is heated to steam heat; the decomposed matter is retained and crystalizes in the box, on a series of movable plates, (which can be taken out and cleaned as often as need be in less than an hour's time,) while the water, after passing through a close filter inside the heater, which renders it perfectly pure and free from foreign substances, is pumped from the lower end directly into the boiler.

As shown in the accompanying cut, the steam enters the apparatus at A, and leaves it at B; at C the water enters; D is a try-cock; E, the exhaust pipe from the engine, and F the cock with which to regulate the supply of water for the boiler; G is the cold-water tank; H, the hot-water pump; I, the pipe from tank to heater; J, the hot-water exit, and K, the door of the heater.

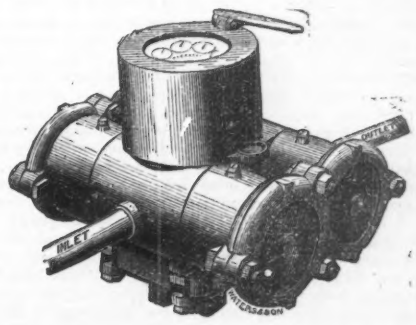
The apparatus is simple and substantial, and cannot get out of repair if properly taken care of, and will last a lifetime. There are no contingent expenses in operating it, as nothing but the escape steam is used to do the work, so that its original cost is the only expense incumbent upon using it. Many hundreds are now in use, and thus far not one has failed to give satisfaction.

J. B Root, 95 and 97 Liberty street, New York City, is agent for the sale of the apparatus.

The Worthington Water Meter.

The general principle on which this meter acts is the reciprocation of pistons or plungers, each stroke of which is marked upon the dial or counter. It is therefore what may be called the positive kind, furnishing no water unless properly at work. In this important respect it differs from that variety of meter called the inferential, through which the flow of water is almost uninterrupted, even if the meter chance to cease working. The water valves are slide valves, so located and propelled as to dispense with all levers, rockshafts or similar contrivances. The engraving shows the machine as it stands when connected. So exactly are these meters fitted, that they can be propelled by the breath or by water poured into them from an open vessel. Three inches head is a full allowance for its working. Excessive speed produces increased and improper resistance. So that to have a meter work without perceptibly reducing the head of water, it should be of such ample size as to perform the duty when running slowly. A moment's thought will convince any one that a good and reliable meter is a machine requiring a combination of peculiarities not easy to be obtained. Most important of all is that of a perfectly positive motion, with nothing like a dead centre, a weak place, or a disposition to stop and refuse to start. Every gallon of waterdrawn must produce a corresponding and registered motion in the meter. If on this point it be not well nigh infallible, it is useless to talk of other advantages.

The expedients for giving this certain motion are very numerous. They include every thing from a quarter crank, or even a three throw crank, to a tumbling bob, or weight falling from side to side at each stroke of the machine. Many of these motions would do very well with a little oil, or an occasional adjustment, but a meter seldom or never gets either; it must work alone and neglected, or it will soon cease working altogether. Again, a meter must be nearly frictionless, and yet so well fitted as to run and register almost on drops. Many meters have been abandoned, because a small stream



would pass through without moving them. The consumer soon finds this out, and gets a great deal of water without paying for it; by keeping a small stream constantly running into some large receptacle. A meter must also be very durable, with working parts that will not rust, and with a counting gear of the best character. Every joint must be strictly water tight, and no large stuffing-boxes can be tolerated. The apparently trivial difficulty of a dripping or leaky meter becomes in many places an insufferable nuisance. In practice, it sometimes happens that a meter is not looked at oftener than once in two or three months. Unless, during these long intervals, everything goes exactly right, the greatest trouble and complaint ensues. Finally, all these important requisites must be combined in a machine that costs very little money, otherwise it is cheaper to waste water than to measure it.

The Worthington meter has been closely and fully tested for the past three years by different corporations and individuals. The cities of New York, Brooklyn, Boston, Balti-

more, Detroit, Cincinnati, Jersey City, and other places, are using them, and give the most satisfactory testimonials. The meter may also be used for the measurement of oil and other liquids; it combines accuracy, simplicity and durability, with such ease and certainty of motion as to offer no appreciable obstructions to the flow of water in the pipes to which it is connected, as it runs and registers upon three inches head, or when delivering the smallest stream.

The meters are made and sold by HENRY R. WORTHINGTON, No. 61 Beekman street, New York City.

MARKET REVIEW.

FRIDAY EVENING, Sept. 4, 1868.

Gold and Silver Stocks.—Mining stocks commanded more attention during the past week. Nevada stocks continue about the same as at the time of our last report. Colorado stocks show an improvement in many kinds. Smith & Parmelee, however, has not yet recovered from its recent decline. Among the recent sales we notice transactions in Quartz Hill at 90c., and Flint Steel Rider at $1 50. Prices are thus quoted at the board:

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	—	—	Kipp & Buell Gold	—	—
American Flag	—	— 50	Keystone Silver	—	—
Atlantic and Pacific	—	— 45	La Crosse Gold	—	28 30
Banton Gold	—	25 — 35	Liberty Gold	—	— 5
Bates & Baxter Gold	—	— 75	Liebig	—	—
Black Hawk G	—	— 7 00	Manhattan Silver	115 00	—
Bobtail Gold	—	— 1 25	Midas Silver	—	— 69
Bullion Consolidated	—	40 —	Montana Gold	—	50 — 62
Burroughs G	—	8 — 10	New York	—	76 1 00
Columbian G. & S.	—	4 — 10	New York & Eld'o	—	—
Combination Silver	7	25 16 00	Nye Gold	—	1 — 2
Consolidated Gregory	4	00 4 10	Ophir Mining	15	60 —
Corydon Gold	—	20 — 3½	Con. Colorado	—	—
Edgehill Mining	—	— 3 60	People's G. & S. of Cal	—	—
Empire G	—	—	Quartz Hill	—	86 — 90
Gold Hill	—	— 1 00	Reynolds Gold	—	—
Grass Valley	—	— 60	Rocky Mountain Gold	—	10 — 20
Gunnell Gold	—	50 — 80	Smith & Parmelee Gold	4	10 4 35
Gunnell Union	—	— 35	Sensenderfer	3	00 8 00
Hyn G & S. bs	—	— 85	Symonds Fork Gold	—	—
Harmon G. & S. bs	—	—	Texas Gold	—	—
Holman	—	—	Twin Riv Sil	15	00 25 00
Hope Gold	—	—	Vanderburg G	—	— 75

Copper Stocks.—The mining Stock board publishes quotations as follows to-day:

				f
Caledonia		5 00	Gardiner Hill	50
Canada		50	Hilton	50 — 1 00
Charter Oak		1 00	Knowlton	2 00
Central		35 00	Minnesota	3 50
Davidson		60	Mendota	1 75 2 75
Evergreen Bluff		10 00	Rockland	4 00
Flint Steel River	1 50			

Petroleum Stocks.—Central has declined to 40c., and Union to $5. National is now held at the advanced rate of $3. Prices are quoted:

	Bid.	Ask'd.		Bid.	Asked.
Bonnehoff Run		1 05	N. Y. and Alleghany		2 15
Brevport	70	1 00	Pit Hole Creek	50	1 00
Buchanan Farm	50	53	Rynd Farm	18	25
Central	40	80	Second National		
Clinton Oil	1 10		Sherman & B	80	
Empire & Pithole			Tarr Farm		
Home			United Pet. Farms	5	15
Manhattan		10	Union	5 00	
National	2 25	3 00	United States	2 50	2 75

Government Stocks continue firm at rates a fraction lower than last week, being thus quoted:

U. S. 6s, 1881, coupon ..... 114 @114¼
U. S. 5-20s, 1862, coupon ..... 113½@113¾
U. S. 5-20s, 1864, coupon ..... 109¾@109¾
U. S. 5-20s, 1865, coupon ..... 111½@111¾
U. S. 5-20's, 1865, coupons ..... 108⅛@108⅝
U. S. 5-20s, 1867, coupon ..... 108⅛@108¾
U. S. 5-20s, July, 1865, coupon ..... 108¾@108¾
U. S. 10-40s, ex. coupon ..... 108⅛@108¾

Foreign Exchange is rather firmer, but transactions are limited. Leading drawers ask 109⅞ for 60 days' sterling, but sales are generally done a fraction below that figure. We quote:

London, (prime bankers')60 days' ..... 109¼@109⅜
London, (prime bankers') sight ..... 109⅝@109¾
London, prime commercial ..... 108¼@108⅝
Paris, (bankers') long ..... 5.16¼@5.15
Paris, (bankers') short ..... 5.13¾@5.12½
Antwerp ..... 5.20 @5.18¾
Swiss ..... 5.20 @5.18¾
Hamburg (bankers') ..... 35¾@34⅝
Amsterdam (bankers') ..... 40½@40¾
Frankfort (bankers') ..... 40¾@40⅝
Bremen (bankers) ..... 79⅛@79⅝
Berlin (bankers) ..... 71⅛@71⅝

Gold.—The price of gold has ranged to-day at 143¾a144, closing at the latter figures. From two to three per cent. was paid for carrying.

American silver is selling at 7a7½ cents below the price of gold. Mexican dollars are quoted at 102¾a103 in gold.

Money continues in good supply at 3@4 per cent. on call, with fewer transactions at the lower rate. The banks are sending currency West at a liberal rate, but as yet find it impracticable to advance the rate on call loans.

Discounts are rather more active; the grain dealers are asking renewals on their paper to some extent; rates remain at 6½@7 per cent. for prime names.

The following will show the exports of specie from the port of New York for the week ending August 29, 1868:

Total for the week	$492,034
Previously reported	63,887,110
Total since Jan. 1, 1868	$64,379,144
Same time 1867	32,975,963
Same time 1866	53,186,360
Same time 1865	20,360,922
Same time 1864	32,230,454
Same time 1863	29,301,832
Same time 1862	39,761,420

Statement of business at the United States Assay Office at New York, for the month ending August 31, 1868:

Deposits of Gold—	
Foreign coins	$4,900 00
Foreign bullion	144,100 00
United States bullion	1,302,500 00
Total	$1,455,500 00
Deposits of Silver, including purchases—	
Foreign coins	$4,000 00
Foreign bullion	13,500 00
United States bullion (contained in gold)	12,500 00
Montana	3,500 00
Colorado	16,500 00
Lake Superior	2,000 00
Nevada	18,500 00
Total	$70,500 00
Total deposits, payable in bars	1,926,000 00
Total deposits, payable in coins	109,000 00
Total	$1,526,000 00
Gold bars stamped	1,142,755 25

Copper.—The sales for the past week have been unimportant; 200,000 Portage Lake at 23¾a23½c., Detroit at 24½c., and Baltimore 23½c.

Tin is nominal at 23¾c. for Straits, with a jobbing business only.

Spelter without wholesale transactions. Quotations of Silisian, 6¼c., gold.

Lead continues in steady demand for consumption; sales 400 tons ordinary foreign at 6.30a6.35c., gold.

Petroleum—Is quiet at 15c. for Crude, and 31½c. for Refined, in bond.

The amount of Petroleum exported from New York to foreign ports for the week ending August 29 was 1,031,245 gallons; total export since Jan. 1 1868, 36,959,324.

The following is the quantity exported from other ports, Jan. 1 to Aug. 29:

		1868.	1867.
From Boston	galls.	1,604,989	1,409,834
	Philadelphia	24,168,536	18,731,366
	Baltimore	1,741,435	1,086,000
	Portland	512,970	....
Total		28,027,930	21,221,209
Total exports from the United States		64,956,254	10,273,808
Same time in 1866			38,688,804
Same time in 1865			11,857,873

Antimony—16½@17c., currency.
Quicksilver—77@80c.
Bismuth—$8 a $6 50 per lb., best qualities.
Nickel—$1,87@$2 50 per lb., as per quality.

THE IRON TRADE.

NEW YORK, Sept. 4, 1868.

There has been no change of any moment since last week; no sales of any amount have occurred. American Fig Iron is quiet. Sales 200 tons Allentown at $43, 100 tons Gray Forge at $32. Scotch Iron is slightly weaker. Some 350 tons Glengarnock have been sold at $43, 250 tons other brands on private terms. Sale 100 tons Wrought Scrap on private terms. Old Rails are quiet and easier, 300 tons old Double Heads on private terms. Russia Sheet is firm; 200 packs have been sold at 13¾ for No. 9@1, 13¼ for No. 11, and 12¾ for No. 12, all gold, and 140 packs at a reserved price. Bar from store may be quoted $90; the market is quiet, and we hear of no invoices offering.

BOSTON, Sept. 2, 1868.

Pig Iron is quiet, and the sales of Scotch have been confined to small lots at $42@45 per ton for Gartsherrie, Coltness and other brands. American Pig has been selling at $40@45 per ton as to quality. Bar Iron remains without change, with steady sales. Russia Iron is firm but quiet at 13@14c. per lb. gold.

Imports of pig iron from January 1st to August 15th:

	1867.	1868
From Great Britain, tons	22,894	10,862
Coastwise ports	6,226	9,747

PHILADELPHIA, Sept. 1, 1868.

Pig metal is held firmly, but there is not much activity. Sales of No. 1 Foundry at $40@41, and No. 2 at $37@38. Scotch Pig is quiet. Manufactured Iron commands $87 50 for bars. Blooms are neglected.

Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending August 29, 1868, and for the season to that date.

From	Week. Tons.	Season. Tons.
Carbon Iron Co	105	5,660
Lehigh Valley Iron Co	120	7,560
Thomas Iron Co	690	20 055
Lehigh Crane Iron Co	300	17,295
Allentown Iron Co	650	13,440
Robert Iron Co	295	6,505
Glendon Iron Co	180	16,040
Other shippers	230	14,397
Total	2,570	100,952

Lake Superior Iron Trade.

Receipts of Ore and Pig Iron at Marquette, up to and including Saturday August 22, 1868, by the Marquette & Ontonagon Railroad.

IRON ORE.

	Previously reported.	For week end'g August 8.	Total.
Lake Superior Iron Co	57,656	4,161	61,817
Cleveland Iron Co	21,647	1,643	23,290
Marquette Iron Co	6 099	366	6,465
Washington Iron Co	16,538	999	18,537
New England Iron Co	4,462	....	4,462
Edwards Mine	7,750	1,006	8,756
Pittsburg & Lake A. Iron Co	15,656	1,191	16,848
Ore to Local Furnaces	14,198	658	14,856
Total Iron Ore, tons	144,006	10,025	154,031

PIG IRON.

Morgan Iron Co	4,738	639	5,377
Greenwood Iron Co	328	....	328
Bancroft Iron Co	2,118	143	2,261
Collins Iron Co	2,528	207	2,735
Michigan Iron Co	2,908	231	3,139
Total Pig Iron, tons	12,620	1,220	13,840
Total ore and pig iron, tons	156,626	11,245	167,871

Market Prices.

NEW YORK, Sept. 4, 1868.

DUTY.—Bars, 1 to 1¼c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate, 1¼c. per lb.; sheet, band, hoop and scroll, 1¼ to 1¾c. per lb.; pig, $9 per ton; polished sheet, 3c. per lb. Payable in gold.

Am. pig, fy. No. 1, best	$40 00@43 00	Light rls for mines &c., at works	80 00 — —
" " 2x, fdry	36 00 38 00	Do. delivered here	83 50 — —
" Grey Forge,	32 00 35 00	STORE PRICES.	
White and Mottled	30 00 31 00	Bar, Swedes, ord'y sizes	— — 155 00
Pure white, for Cal. mar.	31 00 — —	Bar, Eng. and Am., r'd	— — 100 00
Scotch Pig, No. 1, best bd	43 50 45 00	Bar, Eng & Am., com.	— — 90 00
" " " outside	43 00 — —	Scroll	130 00 175 00
Scrap Iron, ex ship	46 00 — —	Ovals and half round	125 00@155 00
Old rails	46 00 49 00	Band	130 00 — —
R.R. Iron, For., fm Stock gold	51 50 52 50	Horse Shoe	130 00 — —
R R. Iron, For., fo imp.	50 00 — —	Rods, ¼@3-16 inch	105 00 165 00
" " Amer, at wks. currency	77 00 — —	Hoop	135 00 150 00
R.R. Iron, Am., deliv'd.	80 00 — —	Nail Rod, per lb	9½ 10½
Solid Steel rls. For, gd	110 — — —	Sheet, Rus. as'd. Nos. (gold)	13 14
Sil rails of any pattern at works, currency	80 00 — —	Sheet, s'gle, D. & T. com	5¼ 6¼
Sil rls of any pat. d. here	83 50 — —	Rails, Eng., gold, ton	51 50 52 50
		Rails, American	89 00 81 00

STEEL.

English, cast (2d and 1st quality) per lb	18 @23
English Spring (2d and 1st quality)	10 @12¼
English Blister (2d and 1st quality)	11½ 20
English Machinery	13½ 16
English German (2d and 1st quality)	14 16
American Blister, "Black Diamond,"	10¼ 16
American, Cast, Tool " "	19 —
American, Spring " "	10 13
American, Machinery " "	— 13
American German " "	10 13

CINCINNATI, Aug. 25, 1868.

The *Journal of Commerce* says: We have still to report a very firm market for pig iron, but cannot make any alterations in quotations. The stock of foundry iron is small. In other articles coming under this head there has been no change:

HOT BLAST CHARCOAL PIG IRON.

No 1 Foundry, per ton	$34 00@$40 00
No. 2 Foundry, per ton	37 00@ 38 00
No. 1 Mill	37 00@ 38 00
No. 2 do	35 00@ 36 00
COLD BLAST.	
Tennessee	45 00@
Missouri	45 00@$47 00
Missouri "Maramec"	47 00@
Car Wheel	60 00@ 63 00
Car Wheel "Hecla"	63 00@
BLOOMS.	
Missouri	100 00@105 00
Missouri "Maremec"	105 00@
BAR IRON.	
Common, per pound	3½@3¾c.
Charcoal, per pound	4¾@5c.
SCRAP IRON.	
Cast, per 100 pounds	$1 20@ $1 35
Wrought, per 100 pounds	1 50@ 2 00
SHEET IRON, PER POUND.	
Boiled	5¾@6¼c.
Charcoal	8 @8½c.
Russian	24 @25c.
Imitation	16 @18c.

IRONTON, O., Aug. 27, 1868.

The *Register* says: There is but little doing in the metal market. Orders are very limited. There have been a few transactions at full quotations. The shipments have amounted to 470 tons during the past week; receipts 600. We quote:

Mill, hot blast	$36 00@37 00
Foundry, hot blast	38 00@39 00
Cold Blast	55 00@60 00
Bituminous forge (Belfont)	— — 37 00

Business in bar is looking up, but prices show no change. The Lawience mill is now running to its fullest capacity. Rates 3¾ to 4c.

Nails meet with plenty of orders at $4 60 for 10d.

Belfont furnace, owing to some slight accident, has not been running very well for some days. There has been considerable effort to keep it from chilling. It is believed that all will be right in a few days, and that the improvements will work to a charm.

CHICAGO, Aug. 27, 1868.

The *Journal of Commerce* says: The market for merchant bar iron rules very firm here, and jobbers are not disposed to shade from previous prices. Large invoices of iron are going from Pittsburgh to the Eastern States, which is quite an anomoly in the trade. Boiler Tubes, Gas Pipes, and Well Drivers' Pipe have advanced 5 per cent. since our last, and the tendency of Boiler Iron has been decidedly upward.

SAN FRANCISCO, Cal., Aug. 6, 1868.

The *Commercial Herald* says the general (Metal) market is exceedingly dull, with but few sales of any importance to record. In our last issue we noted a sale of 300 tons Scotch Pig Iron to arrive, upon terms withheld. Since then 400 tons additional have been thus disposed of. Present quotations are altogether nominal. At the close 226 tons Scotch Pig Iron, per Lady Hulse, sold upon private terms.

THE COAL TRADE.

NEW YORK, Sept. 4, 1868.

The market this week remains with but little alteration from that of last week. Prices have not materially changed since last quotations. The strike being ended, the miners went in, and as operations were resumed, much activity has been evinced under the stimulus of increased prices. The equilibrium between supply and demand being somewhat restored, it may be asked what have the miners gained by their demonstrations? And the reflection follows that it is doubtful if they receive compensation sufficient for the serious trouble and privations they have incurred, although the prospects of the coal mining interest have been improved. There is more activity in the trade, and the receipts by railroad and canal, as well as the shipments, are increasing. The Lackawanna and Lehigh region will be gainers in the late demonstrations, as operations were not seriously interrupted.

From Philadelphia we get the laconic item that there "is rather more doing and the prices steady." At Boston there is something of a panic, and it is quite difficult to fill orders, and higher prices are likely to rule. Although matters at the coal region may be reported as quiet, still there are signs of dissatisfaction, which may break out in a greater or less degree. The advice which we have so repeatedly urged upon consumers, we still adhere to; and now, as previously, we urge them to lay in their supply before an increase is made in the present price of coal.

At a meeting of the New York Lehigh Coal Exchange, convened at the rooms of the Association, on the 29th day of August, 1868, on the occasion of the death, on the preceding day, of Lewis Buckman, Esq., of the firm of Tyler & Co., and a member of this Association, the following resolutions were unanimously adopted:

Resolved, That this Board have learned with unfeined regret the death of their late esteemed associate Lewis Buckman, Esq., so unexpectedly removed from a life of active usefulness to that future world whither we are all surely tending.

Resolved, That we cherish with affectionate regard the recollection of the many virtues of the deceased, of his upright and honorable character, his kindness of heart and urbanity of manner, and that we will long continue to miss his familiar face and genial companionship, and that we hereby tender our sincere condolence to his bereaved family.

Resolved, That these resolutions be entered on the minutes, and a copy forwarded to the widow and family of deceased, and that the proceedings of this meeting be published in the *Miner's Journal*, of Pottsville, Pa., also in the AMERICAN JOURNAL OF MINING of New York city, and in the papers of Bucks county, Pa.

Resolved, That Messrs. Ruckman, Van Dusen, Gulager and Lyles, be a committee to attend the funeral in behalf of the association.

JAMES S. COX, Chairman. JAS. H. LYLES, Secretary.

BOSTON, Sept. 2, 1868.

English Cannel continues quiet, and prices are nominally $18@20 per ton. In Sidney and Picton there have been cargo sales at $8@8 25 per ton. Cumberland has been sold at $8 here. Anthracite has been in good retail demand at $7 50@8 per ton, and by the cargo at $6 50@7.

PHILADELPHIA, Sept. 1, 1868.

There is rather more doing, and prices generally are steady.

The following table exhibits the quantity of Coal passed over the following routes of transportation for the week ending August 22, 1868:

	1867. WEEK.	1867. TOTAL.	1868. WEEK.	1868. TOTAL.	INC. OR DEC. WEEK.	INC. OR DEC. YEAR.
Phil. & Reading R. R.	60,548	2,127,215	83,165	1,813,597 i	22,617	d283,718
Schuylkill Canal	16,041	615,650	19 892	503,569 i	3,751	d112,081
Lehigh Valley R. R.	47,607	1,372 013	46,642	1,533,764 i	966	i 161,751
Lehigh Canal	28,276	564,410	36,526	514,406 i	8,250	d 50,005
Scranton North	12,266	281,342	14,851	553,491 i	2,586	i 72,151
" South	24,196	858 028	23.194	715,794 d	1,050	d142,315
Penn'a Coal Co. Rail.	17,713	531,389	22,977	593,153 i	5,364	i 61,713
Penn'a Coal Canal	836	13,824	717	18,080 d	119	i 4,266
Del. & Hudson Canal	35 712	832.558	45,125	933,059 i	9,413	i 130,501
Shamokin	6,414	310.819	13,447	313,412 i	7,033	i 2,592
Trevorton	572	30.193	1,241	10,275 i	669	d 18,918
Short Mountain	1,082	47,798	3,551	69,568 i	2,472	i 21,769
Lykens Valley C. Co.	879	42.122	2,111	56,443 i	1,231	i 14,321
Huntingd'n & B'd T	4,957	156,397	6,415	163,393 i	1,458	i 8,896
W'mstown Col'y, E.	3,891	75,250	5,331	117,852 i	1,943	i 42,602
Wyoming South	11,915	195,078	15 923	173,801 i	4,008	d 21,974
Wyoming North	.....	13,133	7 302	30 667	.....	i 17,534
Lehigh & Susq. R.R.	.....	.....	12,420	277,111	.....	.....
Total	253,711	8,907,319	360,938	8,757 351	72,830	1165,457
	.....	.....	253,711	8,907,319	.....	.....
Increase	.....	.....	107,227	d 149,968	.....	.....

Report of Coal Transported over Lehigh Valley Railroad,

For the week ending August 29, 1863, and previously this season, compared with same time last year.

WHERE FROM	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.
WYOMING REGION.		
New England Coal Co	62 02	112 17
Newport Coal Co	.....	.....
Valley Coal Co	.....	.....
Warrior Run Mining Co	.....	.....
Parrish & Thomas	639 01	8,915 01
New Jersey Coal Co	250 08	10,199 16
Gaylord Mines	.....	224 11
Alorighton, Roberts & Co	445 09	6,925 09
Lehigh & Susquehanna	.....	15 10
Germania Coal Co	587 00	13,802 12
Franklin "	.....	233 06
Wilkesbarre Coal & Iron Co	9,082 05	169,007 13
Union Coal Co	.....	2,010 07
Mineral Spring	.....	6,655 17
H. B. Hillman & Son	.....	1,503 17
Bowkley, Price & Co	78 06	324 12
Wyoming	.....	3,312 04
Henry	337 10	3,474 09
J. H. Swoyer	180 15	2,890 07
Lances' Colliery	137 09	1,104 09
Morris & Essex Mutual	.....	73 19
Shawnee	743 08	12,145 01
Delaware & Hudson Co	359 02	6,532 04
Pine Ridge Colliery	242 18	4,154 13
Consumers Coal Co	208 08	2,884 13
Harvey Brothers	.....	184 11
Other Shippers	321 06	6,500 13
Total Wyoming Region	13,675 06	255,101 06
UPPER LEHIGH REGION.		
Upper Lehigh	2,973 15	74,192 02
Other Shippers	280 12	7,492 15
Total Upper Lehigh	3,254 07	81,684 17
HAZLETON REGION.		
A Pardee & Co	2 290 09	42,826 16
Linderman & Skeer	93 04	1,043 06
Sharpe, Weiss & Co	1,406 10	25,815 11
W. S. Halsey & Co	.....	1,701 09
Harleigh Coal Co	79 07	19 171 09
G. B. Markle & Co	2 031 13	29,529 06
Ebervale Coal Co	762 03	18,500 16
Stout Coal Co	97 08	9,047 06
Buck Mountain Coal Co	1 395 04	13,547 12
Coxe Brothers & Co	621 11	6,404 07
Ashburton Coal Co	.....	64 06
Highland Coal Co	368 01	10,425 12
Pardee Bro. & Co	5 01	5,286 12
Jeddo Coal Co	254 08	5,778 10
Mount Hall	.....	.....
Other Shippers	.....	927 02
Total Hazleton	9,517 15	190,025 00
FROM MAUCH CHUNK.		
Summit Mines	.....	.....
Room Run Mines	1,920 17	8,230 06
Other Shippers	.....	17 00
Total Mauch Chunk	1,900 17	8,247 06
" Hazleton Region	9,517 15	190,025 00
" Upper Lehigh	3,254 07	81,684 17
" Wyoming	13,675 06	255,101 06
Grand Total	28,348 05	535,058 09
Corresponding week last year	7,458 12	342 017 00
Increase	20,889 13	193,328 03
Decrease	.....	.....
Forwarded South from Mauch Chunk by rail	10,145 14	228,573 00
Delivered on line L. & S. R.R. above Mauch Chunk	1,273 19	48,537 19
Delivered at Coal Port for shipment by Canal	16,928 12	257,947 10
Total	28,348 05	535,058 09

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR THE WEEK ENDING SEPT. 4, 1868.

	RAILROAD.	CANAL.
St. Clair	55	6,366
Port Carbon	10,319	639
Pottsville	2,549	15
Schuylkill Haven	40,226	20,000
Auburn	4,914	294
Port Clinton	28,872	1,194
Company's use	3,694	.....
Total for Week	90,659	28,508
Previously this year	1,843,597	503,569
Total	1,934,286	532,077

Report of Coal Transported over Lehigh Valley Railroad

For the week ending August 27, 1868, and previously this season, compared with same time last year :

Where shipped from.	WEEK. Tons. Cwt.	PREVIOUSLY. Tons. Cwt.	TOTAL. Tons. Cwt.
Total Mahanoy	10 727 13	280 440 00	292.167 13
Total Hazleton	17,993 17	715,349 09	733,349 06
Total S. Lehigh	307 04	32,809 17	33,117 01
Total S Meadow	10,129 11	274,986 14	245,116 05
Total Wyoming	6,477 08	182,536 09	190,013 17
Grand total	46,641 13	1,487,122 09	1,533,764 02
Same time last year	47,607 05	1,324,406 00	1,324,013 05
Increase	....	162,716 09	161,750 17
Decrease	965 12	....	....
Forwarded East from M. Chunk by r'l	46,641 13	1,487,122 09	1,533,764 02
Delivered at M. C'k and on line of r'd above that point	1,308 05	25,203 06	26 511 11
At Penn Haven for shipm't by canal	8,050 17	76,465 17	81,516 14
At M. Chunk for shipment by canal	5 614 01	42,501 14	48,142 15
Total by rail and canal	60.641 16	1,631,293 06	1,692.935 02
Same time last year	49,601 12	1,386,904 11	1,436,510 03
Increase	12,040 04	244,384 15	256,424 19
Decrease	....	....	....

Report of Coal Shipped by Lehigh Canal,

Week ending August 29, 1868, compared with same time last year :

WHERE FROM.	Week. Tons. Cwt.	Total. Tons. Cwt.
Mauch Chunk Region	13,411 01	203,358 12
Beaver Meadow Region	5,818 11	46,667 18
Mahanoy Region	.....	1,543 13
Hazleton Region	8,240 07	153,255 15
Upper Lehigh Region	835 03	9,918 07
Wyoming Region	8,220 16	99,671 06
Total	36,526 03	514,405 11
Corresponding week last year	28,275 17	564,410 13
Increase	8,250 06	.....
Decrease	.....	50,005 02

Cumberland Coal Trade.

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad for the week ending Aug. 29, were as follows :

From Cumberland and Pa. Railroad, via Cumberland.	
Consolidation Company	2,422 01
Borden	1,004 14
Midland	961 06
Allegany	23 13
From George's Creek, via. Piedmont.	
George's C. & I. Company	2,172 18
Central	1,192 18
Atlantic	975 15
Savage Mt	92 00
Franklin	958 08
Piedmont	1,299 16
Swanton	740 16
Potomac	1,488 11
Hampshire	2,020 13
American	730 15
Baxton	604 06
Total	17,618 10
From Eckhart R. R.	
C. & I. Co	2 393 00
Total	20,011 10

BY C. & O. CANAL.—There were despatched from this port, during last week, 17,792 13 tons of Coal, forwarded by the following companies :

American	4,182 15
Borden	1,642 06
Central	4,313 05
Consolidation	2 766 14
C. & I. Co	2,331 06
H. & B	1,417 04
National	1,139 03
Total	17,792 13

Prices of Coal by the Cargo.

[CORRECTED WEEKLY !

At New York, September 4. 1868.

Schuylkill R. A., choice	$5 75@$....	Schuylkil Chestnut	4 50 ....
" Ordinary	5 50	Lehigh W.A Lump Old Co	5 62½ ....
" W. A., Lump	5 50	Lehigh Broken	5 87½ ....
" Steamboat	5 00	" Egg	5 87½ ....
" Broken	5 50	" Stove	5 62½ ....
" Egg	5 50	" Chestnut	4 87½ ....
" Stove	5 75	Shamokin	5 50 ....
SPECIAL COALS.—DEALERS' QUOTATIONS.			
Diam'd Vein R. A., Sch'kill	5 50	Old Co 's W. A. Lehigh	5 50 ....
Locust Dale W. A., "	5 50	Mt. Pleasant	5 00 ....
Honey Brook " Lehigh	6 25 6 50	Broad Mountain	....
Harleigh " "	5 50	Back Ridge W. A., Sh'kin	5 50 ....
Spring M'n " "	5 50	H. Heils, E. S'kin, Lorb	5 50 ....
Sugar Creek " "	6 25 6 50	New England Red Ash	5 25 ....
Ashburton " "	5 50	Wyoming	5 50 ....

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, September 4 1868.

Lehigh Lump and Sc'mb't	5 50@....	Henry Clay, Egg & Stove	....@1 50
" Broken and Egg	5 50	Locust Mount Lump and Steamboat	....
" Stove	6 00	" Broken	....
" Chestnut	4 75	" Egg	....
Schuylkill R. A.	....	" Stove	....
" Chestnut	....	Lorberry Coal	5 00 ....
" W. A. Lump	....	Shamokin	....
" Broken	....	Franklin, (Lykens Valley)	5 50 ....
" Egg and Stove	....	Broad Top	5 00 ....
Schuylkill Chestnut	....@....		
Hill & Harris, Egg & Stove	4 80		

Scranton Coal at Elizabethport, September 4, 1868.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 75@....	Egg	5 75 ....
Steamer	5 25	Stove	5 75 ....
Grate	5 50	Chestnut	4 75 ....

Prices for Pittston Coal at Newburgh, September 4, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$5 10@....	Egg " " "	5 10 ....
Steamer, " " "	5 00	Stove " " "	5 35 ....
Grate " " "	5 10	Chestnut " " "	4 55 ....
Pea " " "	3 25		

70 cents additional to New York.

Lackawanna at Rondout, September 4, 1868.

Lump	$4 75@....	Egg	$5 25@....
Steamer	5 10@....	Stove	5 50 ....
Grate	5 20@....	Chestnut	4 50 ....

65 cents additional to New York.

Lehigh Coal at Elizabethport, September 4, 1868.

Lump	5 00@....	Chestnut	4 25 ....
Steamboat and Broken	4 65	Stove	5 00 ....
Egg	4 75		

Wilkesbarre Coal at Hoboken, August 28, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	$5 50@....	Egg	5 75@....
Steamer	5 75	Stove	6 00 ....
Broken	5 75	Chestnut	5 25 ....

At Baltimore, September 4, 1868.

Wholesale prices to trade.		Trevorton R. A.	$5 00@$5 40
Wilkesbarre by cargo or car load	@$5 65	By retail, per ton of 2,240 lbs., delivered	6 75@ 7 25
Pittston and Plymouth	$5 50@ 5 65	Georges C'k and Cumberland f. o. b. at Locust Point for shipping	4 65@ 4 75
Shamokin R., or W. Ash	5 15@ 5 40		
Lykens Valley R A	5 40@ 5 60		

At Havre de Grace, Md.

Cargo prices for shipment *south* of Patapsco river, (drawback allowed of 21c,)		Shamokin R., or W. Ash	$5 25@....
		Lykens Valley R. A	5 40@....
Wilkesbarre and Pittston W. Ash	$5 25@....	Trevorton R. A	5 15@5 25

At Georgetown, D. C. and Alexandria, Va.

George's Creek and Cumberland f. o. b. ..... $....@ 4 55

An advance of twenty cents per ton has recently been allowed boatmen on canal freights from Cumberland, and the price of coal correspondingly advanced

Prices of Gas Coals.

September 4, 1868.

PROVINCIAL. Duty, $1 25	Coarse. Gold.	Slack. Gold.	AMERICAN	Coarse. Currency.	Slack. Currency.
Block House	$1 75	$ 75	Westmoreland Co.	$8 50	$8 00
Gowrie	1 75	75	Despard Coal Co	8 25	8 00
Lingan	1 75	75	Penn	8 50	8 00
Sydney	2 13¾	71¼	Newburgh Orrel Gas	8 50	8 00
Pictou	2 13¾	1 18¾	Delivered in New York.		
Little Glace Bay	1 75	1 00			
Caledonia	1 60	75			

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$ 9 50	Liverpool House Cannel	18 00@19 00
" " Cannel	14 00	" " Orrel	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD

Liverpool House Orrel, scr'd	$18@20	Livp'l House Can'l, scr'd	22 00@— —

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

Rates of Freight from Newburgh

RIVER.		EASTERN.	
On "Pittston" Coal, by boats and barges of the Pennsylvania Coal Company, per ton of 2,240 lbs.		Stamford	$1 25
Troy and West Troy	$ 55	Norwalk	1 25
Albany and Greenbush	50	Bridgeport	1 25
Cooymans	45	New Haven	1 25
Coxsackie and Stuyvesant	40	New London	1 40
Hudson & Catskill	35	Norwich	1 50
Saugerties and Barrytown	35	Mystic	1 45
Rhinebeck and Rondout	30	Stonington	1 45
Po'keepsie and New Paltz Land.	25	Sag Harbor	1 45
Fishkill Landing	20	Bristol	1 55
Cold Spring and West Point	20	Newport	1 55
Peekskill	40	Fall River	1 55
Haverstraw	45	Providence	1 60
Sing Sing and Nyack	50	Pawtucket	1 60
Tarrytown and Piermont	50	Warren	1 60
Yonkers	55	New Bedford	1 75
The Coal must be discharged with all reasonable dispatch, at the expense of the consignee, who shall also pay wharfage on the boat. Boatmen will tend guy while unloading.		Boston	1 90
		East Cambridge	2 15
		Salem	2 25
		Newburyport	2 15
		Portsmouth	2 25
		Portland	2 25
			2 00

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

Sept. 3, 1868.—From Philadelphia & Reading Railroad Wharves, Phila., to

Boston	2 35	2 50	New York	1 25@$1 30	
Providence	— —	2 00	Braintree	2 75	— —
Lynn	2 50	— —	Dorchester	2 50	— —
Quincy Point	2 50@	— —	Dighton	2 00	— —
Bristol	2 00	— —	Nantucket	2 50	— —
Gloucester	2 50	— —	New Bedford	2 00	— —
Norwich	— —	2 00	Roxbury	2 50	— —
Charleston	— —	1 75	Salem	2 25	2 50
Baltimore	— 95	— —	Saugus	2 25	— —
Portland	2 25	2 35	Newport	2 60	— —
Pembroke	2 30	— —	Hartford	2 30	— —
Beverly	2 50	— —	Brooklyn	1 30	— —
Bath	2 50	— —	Marblehead	2 50	— —
Rockland	2 50	— —	Medford	3 00	— —
Portsmouth	2 62½	2 65	Milton	2 50	— —
Amesbury	2 90	— —	Weymouth	2 50	— —
Chelsea	2 50	— —	Fair Haven	2 00	— —
Charlestown	2 50	— —	Mystic	2 00	— —
Cambridge	2 60	— —	New London	2 00	— —
Cambridgeport	2 50	— —	New Haven	1 80	— —
Chatham	3 50	— —	New Suffolk	2 10	— —
East Cambridge	2 50	— —	Greenport	2 00	— —
Fall River	2 00	— —	Wilmington, Del	75	— —
Hingham	2 60	— —			

From Elizabethport and Port Johnston.

Albany	$ 85@— —	New London	$1 15 — —
Boston	2 00 — —	Newport	1 40 — —
Bridgeport	1 00 — —	New York	60 — —
Fall River	1 45 — —	Norwalk	1 00 — —
Hartford	1 50 — —	Norwich	1 35 — —
Hudson	1 00 — —	Pawtucket and towing	1 60 — —
Wareham	1 55 — —	Portland	1 90 — —
Middletown	1 25 — —	Portsmouth	2 10 — —
New Bedford	1 50 — —	Providence	1 10 — —
Newburyport	2 15 — —	Salem	1 75 — —
New Haven	1 00 — —	Augusta	2 25 — —

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond.—(Philadelphia.)

Philadelphia and Reading R. R. from Schuylkill Haven $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice :

	Drawback.	Freight.	Nett.
Lump	85	$2 00	$1 15
Steamboat	85	2 00	1 15
Broken	50	2 00	1 50
Egg	50	2 00	1 50
Stove	25	2 00	1 75
Chestnut	40	2 00	1 60

From Port Carbon, 8 cents per ton more.

To Elizabethport.

L. V. Railroad from Mauch Chunk to Easton	$ 5.
C. R. R., N. J., Easton to Elizabethport	1 –
Shipping Expenses at Elizabethport	2
Total	2 1

To Port Johnson.

L. V. R R.	$ 1
C. R. R of N. J.	1 1
Shipping Expenses	25
Total	2 35

To Hoboken.

L. V. R.R.	81
Morris & Essex R.R.	1 29
Shipping Expenses	25
Total	2 35

[BY CANAL.]

To Port Richmond.

From Schuylkill Haven to Port Richmond	$1 00
Freights and tolls by Raritan Canal	1 90
	2 90
Drawback	30
Total	2 60

To New York.

From Mauch Chunk to New Brunswick, by Lehigh, Del. Div. and Del. & Raritan Canal	$ 90
Freights through	1 25
Towage	20
	2 35

To New York via Morris Canal.

Lehigh Canal	$ 34
Morris "	40
Towage	10
Freight	1 55
Total	2 39

Expenses from Mauch Chunk to Jersey City for Re-shipment.

Lehigh tolls (net)	$ 34
Morris "	34
Freight	1 50
Re shipping	30
Total	2 48

Provincial Freights.

TO NEW YORK.		TO BOSTON.	
Sydney	3 50	Sydney	$2 75
Lingan	....	Lingan	2 65
Cow Bay	4 50	Cow Bay	....
Port Calidonia	4 25	Port Calidonia	3 00
Little Glace Bay	4 00	Little Glace Bay	2 75

Foreign Freights.

New Castle and Ports on Tyne	£13@15 keel.
Liverpool	12s. 6d.@15s ton.

MONTHLY METAL CIRCULAR.

NEW YORK, Sept. 3d, 1868.

The dullness noticed in my last circular of 4th August continues. Good crops, cheap money and low prices fail to stimulate trade.

Gold has fluctuated violently. It advanced from 145¼ per cent. on the 4th ult. to 150 per cent. on the 6th., and declined again to 143½ per cent. on the 20th. To-day it is quoted 143⅞a144 per cent. Exchange on London 9¾ per cent.

TIN.—Several large parcels of Straits have been privately disposed of during the last six weeks and the dealers have sold freely. Sales at 23¼c. and 23½c., 30 days, have been reported, but the quotation is nominally 23¾c. gold for Straits, 26¾c. for Banca, and 24c. for Eng ish.

The importations for August are light, viz. 1,600 slabs Straits, 200 slabs Banca and 30 tons English.

The stocks are estimated at 20.000 slabs Straits,
3,000 " Banca and Billiton,
and 30 tons English, equal to 750 "
Total in Boston and New York, 23,750 slabs
against 18,900 " on the 31st Aug. 1867.
27,600 " " 1866.
3,800 " " 1865.
13,900 " " 1864.

The London market has been steady at 93 shillings for Straits. Bancs in Amsterdam fl. 54¼.

SPELTER has been sold at 6¼c. gold for Silesian and Stolberg. Importation for August 170 tons. Stock 300 tons against 900 tons on the 31st August, 1867.

COPPER.—In the middle of last month a large business was done at 24c. for Detroit, 23¾c. for Portage Lake and Baltimore. Since then the market has been very dull, and although little has been offered for sale, the price has declined to 23½ for Detroit, 23½ for Portage Lake, and 23¼c. for Baltimore.

The stock is small for the season, the Lake Companies have sold nearly all they have received and part of their expected arrivals for September and October, the Baltimore Company makes very little, the manufacturers are said to consume more than last year, the price at to-day's rate of Gold is lower than ever, and still the article remains neglected.

Export to Europe in August, 130 tons Lake. The London market was quoted on the 22d August, £68 for Chili bars ; it seems to have recovered from the panic occasioned by the large shipments from Chili.

LEAD has been in improved demand for consumption at 6¼c. to 6¾c. gold for ordinary foreign.

The importations for August amounted to 1,350 tons, and the deliveries for consumption to 2,850 tons.

The stock is 2,500 tons
against 2,700 " on the 31st Aug., 1867.
3,000 " " 1866.
3,100 " " 1865.

RUDOLPH C. WINTERHOFF,
64 Beaver Street. P. O. Box 652.

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, Sept. 4, 1868.

Prices of stocks ranged to-day :

Calumet	46	Quincy	20
Copper Falls	18	Cary Improvement	10
Franklin	12	Isle Royal	—
Hecla	72	Water Power	18½
Hancock	—	Bos., Hart & Erie RR	22½
Minnesota	2	Rockland	—

SAN FRANCISCO STOCK MARKET.

A Telegram from San Francisco, dated Sept. 2, quotes :

Stocks.	Bid per ℔t.		Stocks.	Bid per ℔t.	
Gould & Curry	—	@ 105	Belcher	160	@ —
Savage (per share)	114	@ —	Uncle Sam	..	@ ..
Chollar Potosi	177	@ 183	Amador	..	@ 248
Ophir	..	@ 21	Imperial (per share)	..	@ ..
Hale & Norcross	81	@ 84	Alpha	55	@ 54
Crown Point	76	@ 80	Kentuck (per share)	..	@ 430
Yellow Jacket	1,270	@1,290	Cal. Steam Nav'n Co.	..	@ ..

New York Imports of Metals, &c.

The following will show the imports of Metals, &c., at the port of New York from foreign ports, for the week ending Aug. 28, 1868. The quantity is given in packages, unless otherwise specified.

Metals, &c.	Quantity.	Value.		Quantity.	Value.
Anvils	529	6 253	Iron, other, tons	3,546	90,934
Brass Goods	13	1,090	Lead, Pigs	7,402	37,150
Bronzes	57	3,487	Metal Goods	157	17,310
Chains & Anchors	266	9,541	Nails	7	777
Copper	..	237	Needles	18	4,288
Cutlery	87	37,586	Old Metal	..	8.127
Gas Fixtures	..	....	Platina	1	2,419
Guns	8	1 865	Plated Ware	..	....
Hardware	150	25,030	Percussion Caps	4	8.4
Iron, hoop, tons	109	4,321	Saddlery	5	1,576
Iron, Pig, tons	370	5,421	Steel	6,055	81,760
Iron, Railroad bars	10 090	55,602	Spelter ℔	109,060	4.758
Iron, sheet, tons	131	6,818	Tin, boxes	25 018	162,565
Iron, tubes	584	1,717	Tin slabs	25,304	5,025
			Wire	19	709

San Francisco Coal Trade.

[From the *Commercial Herald*, Aug 6.]

The supply of Anthracite and Cumberland is inconsiderable, particularly the latter, which is scarce, and extreme prices demanded. On the contrary, Bituminous from Australia, as well as from our own Mt. Diablo mines, is considerable, and prices somewhat nominal. We note sales of 830 tons Australian, ex General Wyndham, and 700 tons do. ex Gentoo, upon private terms. We quote Australian, $10@11 ; Anthracite, $15@16 ; California, $7@9 ; Cumberland, $30 ; Cannel, $16 ; Nanaimo, $12 50@13 per ton. At the close 200 tons Scranton, ex Dexter, sold private.

Imports from January 1st to August 1st:

Anthracite, tons	18,560	Coos Bay, tons	7,339
Australian, tons	11,573	English, tons	9,967
Bellingham Bay, tons	5,200	Lehigh, tons	5,139
Cumberland, cks	2,363	Mt. Diablo, tons	54,889
Chili, tons	4,191	Nanaimo, tons	17,509

☞ The highest mountain in the world is the Ivy Gamin, 20,459 feet. The highest peak in the world is Mount Everest, 29,002 feet. The greatest mountain height visited by man is beyond Ivy Gamin, 22,359 feet. The highest point at which a man can ascend, without having his health seriously affected, is 16,500 feet. The highest ballon ascent yet made is 40,000 feet.

☞ The Mexican debt, now acknowledged by the present Government, foots up $100,000,000. This is $12 00 per capita for the whole population. Of the whole sum, $60,000,000 are due to English creditors, about $12,000,000 to Spain, $5,000,000 to France, and a small sum to the United States.

☞ It is estimated that the fire in the woods in Canada, this season, has destroyed, in the Ottawa districts, standing pine lumber to the value of $4,000,000, and the woods are still burning. The boats on the Montreal route are greatly detained by the smoke on the river.

☞ An electric organ is now being built in London for Christ Church, Camberwell. The organ is to be placed in a chamber on the south side of the chancel, above the vestry, but the organist will sit on the opposite side, among the choir, some fifty feet distant from the organ.

☞ A Prussian chemist has invented a method of warfare on the battle-field. It is a powder that makes a whole regiment sneeze for half an hour.

☞ Among the latest inventions is a rubber bath-tub, about three feet in diameter, when spread out, which can easily be stowed away in a lady's satchel.

☞ Very rich coal mines have been recently discovered in our new Territory of Alaska. We have long suspected that it was a coaled country,

☞ A Belgian challenges the world to gastronomic duel. He proposes to eat a hundred dozen oysters and finish with a beefsteak.

☞ There are at present seventeen lines of steamers, making 1,322 voyages per annum, between England and America.

☞ An upright trunk, which resembles a bureau, has been invented.

☞ A tunnel between Scotland and Ireland is talked of, one and a quarter miles long, and costing about $16,000,000.

AMERICAN
Journal of Mining.

WESTERN & COMPANY, PROPRIETORS.

ROSSITER W. RAYMOND, EDITOR.

OFFICE, 37 PARK ROW, NEW YORK.

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☞ Mr. T. P. PEMBERTON is Editor of the Mechanical Department and Agent for the JOURNAL OF MINING.

☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," and to give the number of our Box at the Post Office, which is 5969, to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY, SEPTEMBER 5.

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LATENT HEAT OF LIQUIDS.

On page 72, Vol. VI., of the JOURNAL OF MINING, we discussed, at some length, the question of The Unit of Heat. We propose, in the following article, to speak on the subject of Latent Heat in Liquids. This class of phenomena was not well understood until the amount of caloric required to raise the temperature of one pound of water one degree Fahrenheit was adopted as the unit of heat.

When we attempt to raise the temperature of a mass of ice, by supplying it with heat from any source whatever, we find that as soon as the temperature of 32° (the melting point) has been attained, all the heat imparted is consumed in melting it, and that in this way a considerable amount of heat is absorbed, in order to convert it into water; nor does the water formed indicate any higher temperature than 32° till all the ice is melted. Careful experiments have shown that ice, when thus converted into water, will absorb one hundred and forty units of heat; or, in other words, that in order to convert one pound of ice into one pound of water, as much heat is required as is sufficient to raise the temperature of one hundred and forty pounds of water one degree, or of one pound of water one hundred and forty degrees. It is clear, moreover, that, in this case, the thermometer is no guide at all, since the ice, before melting, indicated 32 deg. of temperature, and, after melting, though having meanwhile absorbed one hundred and forty units of heat, still indicated the same degree. This heat has also been called the *heat of fusion*, and any solid substance, when melted or converted into the liquid state, will absorb heat in the same manner. The amount of heat rendered latent varies for different substances. Some of these different amounts, together with the melting points of the substances, are given in the following table:

	MELTING POINTS, DEGREES FAHR.	UNITS OF HEAT ABSORBED BY MELTING.
Ice	32°	140
Sulphur	230°	142
Spermaceti	130°	144
Lead	617°	160
Beeswax	149°	171
Zinc	700°	480
Tin	430°	490
Bismuth	500°	550

It will be seen that the above units of heat, absorbed by melting, stand in no relation to the melting point whatsoever, but are, on the contrary, entirely independent of it. It may be observed that the latent heat of melted lead is not much above that of melted ice, while that of melted bismuth is nearly four times greater than that of melted ice, and this, too, notwithstanding the fact that the melting point of lead exceeds that of bismuth by more than 100°.

There are three methods of determining the amount of latent heat absorbed by fusion. The first method consists in exposing the substance to be melted to a constant source of heat, as, for instance, to the gas flame of a large Bunsen burner; having previously determined by experiment, how many units of heat it will produce in a minute, or in every five minutes, or, in other words, how many degrees in temperature it will raise one pound of water in any given time. Suppose we regulate this flame to the effect that it will raise the temperature of a pound of water one degree in a minute. This minute of time will become the measure of the units of heat communicated, and any substance melted over such a flame will have the units of heat, made latent by this process of melting, indicated by the time in minutes occupied in accomplishing this.

This method is, however, not adapted to high temperatures, such as are necessary, for instance, in the melting of metals, from the fact that the loss by radiation is so great (notwithstanding every precaution possible,) as to cause the resulting numbers to be greatly in excess of the truth.

A second, and more correct method, is that of mixing. When we take, for instance, one pound of boiling water, at 212° Fahr., and pour it upon one pound of spermaceti previously heated to near its melting point, which is 130° Fahr., we find that the water will soon be cooled down to 130°, and will have melted about one-half of the spermaceti. The water will, therefore, have lost 82 units of heat in effecting this; and to melt the whole of the spermaceti it will require one and three-quarter pounds of boiling water. This water, when cooled down to 130°, will of course have lost very nearly 144 units of heat.

The third, and most trustworthy method, and, also, that which is applicable in all cases, is the measuring of the amount of ice melted by the solidification of a previously melted substance. From a knowledge of the fact that the water produced by the melting of one pound of ice contains 140 units of heat, or that every one hundred and fortieth part of a pound of melted ice represents a unit, we have only to weigh the water obtained from the inside of a block of ice, into which the melted substance has been introduced, and which has been melted by the simple cooling and consequent solidification of that substance. Suppose, for instance, we have one pound of melted tin, showing a temperature of 430° Fahr., its melting point, and introduce this into a cavity made in a large block of ice. We will now place this block of ice containing the tin into a properly constructed vessel, and then cover the melted metal with another block of ice. Having waited until the tin has become solidified, but still indicating a temperature of 430° Fahr., we shall find, upon examination, that three and a half pounds of ice have, meanwhile, been melted, and as the melting of every pound of ice has absorbed one hundred and forty units of heat from the cooling mass of metal, the three and a half pounds must have absorbed three and a half times that amount, or four hundred and ninety units of heat. This amount represents, therefore, the latent heat of molten tin.

SONGS OF MINERS.—IV.

Some months ago we began the publication of a series of songs which the miners either sing or ought to, if they don't. The ballad of Jim Green, which was the last we gave, having finally found its way into the Editor's Drawer of *Harper's Magazine*, we may fairly conclude that it is tolerably old and well-worn, and that the time has come for another. The following is a true, though somewhat idealized picture of placer-mining. The miners do all these things and more, but they scarcely put it into such fine words. "To simple fare returning" means "goin' to grub;" "We need no Midas' magic wand" means "none of your scientific cusses for us;" while "the mountain sod our couch at night" would probably be translated, "had to camp in a wakey-up, by thunder, jest like any Injun." In spite of these little drawbacks of style—not exactly anachronisms, but anatopisms, certainly—we deem the poem a gem, and only regret that the author is unknown to us, as we find it floating about with no other mark than the initial S.

The Eastern sky is blushing red,
The distant hill-top glowing,
The water o'er its rocky bed
In idle frolicks flowing;
'Tis time the pick-axe and the spade
Against the rocks were ringing,
And with ourselves the golden stream
A song of labor singing.

The mountain air is fresh and cold,
Unclouded skies bend o'er us;
Broad placers, rich in hidden gold,
Lie temptingly before us.
We need not Midas' magic wand,
Nor wizard's rod divining—
The pick-axe, spade, and brawny hand
Are sorcerers in mining.

When labor closes with the day,
To simple fair returning,
We gather in a merry group—
Around the camp-fires burning.
The mountain sod our couch at night,
The stars keep watch above us;
We think of home, and fall asleep
To dream of those who love us.

REPORTED DISCOVERY OF TIN IN COLORADO.

The *Rocky Mountain Herald*, of Denver, Colorado, is out with a communication purporting to come "From the 'Tin' Mines" in Summit County. There have been so many "fish stories" afloat at one time and another, in regard to the discovery of deposits of the ores of tin, that we are not disposed to accept in full faith all that is said, though of course, it *may* all be true. Mining fevers, excitements based on no just grounds whatsoever, are grindstones, so to speak, that, within the past few years, have sharpened up a great many very dull axes, and that, too, at the expense of a great many ill-able to endure the friction incident thereto. If what the correspondent states, when he talks in the following vein, is true, then, sure enough, a very important discovery, and one that, in the end, will tell heavily on the tin trade, has just been made. We clip the following lines from the article in question:

"We have discovered *tin ore*—the real oxide of tin. We have two fine lodes of it. One of them indicates a crevice 100 feet wide, and the other has defined itself about 8 to 10 feet wide. It is the genuine oxide of tin ore, and there is plenty of it. It yields seventy-five per cent. of tin from the ore. We have assayed it at our laboratory, and have the tin to show for it. We have tested it before the blow-pipe with acids, by its specific quality and every other way—have even *tinned iron* with the metal taken out. There is no discount on the article, and to satisfy you, I send you a specimen taken at random from about a cord of ore we have taken out. You may judge of it for yourself.

"Mr. M B. Grose, lately from Cornwall, England, where he has been engaged as a tin-ore assayer and inspector of tin ores, has been with us and examined the ores, and pronounced it the real oxide of tin ore. He says he never saw, in England, richer or better looking ore. He tested it by the blow-pipe and assay, and has no hesitation in pronouncing it the genuine 'tin.'"

That the above statements are even half true we sincerely hope, yet we cannot disguise the fact that we are far more inclined to doubt than to believe. We give place to the report, in view, simply, of the hope that we may the sooner learn the truth or falsity of it.

BILLS DUE.

Before our subscribers will have an opportunity to read these lines, several thousand of them will have received a statement of their account with the publishers of the JOURNAL OF MINING. It is our rule to notify, from time to time, any that are in arrears. Should there be any who desire to discontinue taking the paper, it is our wish that they notify us at once, remitting to us, at the same time, whatever may be our due. We hesitate at no expense in order to get up a valuable paper, and hope that our claims will be promptly attended to.

EDITORIAL CORRESPONDENCE.—NO. XVI.

THE DEEP PLACERS OF NEVADA COUNTY, CALIFORNIA.

August 13, 1868.

The following letter was written at our request by Mr. W. A. SKIDMORE, of San Francisco, an intelligent and experienced observer, whose views we take pleasure in presenting to our readers.—R.

SAN FRANCISCO, July 21, 1868.

R. W. RAYMOND, ESQ.:

DEAR SIR—In accordance with a promise made to you at Grass Valley, I herewith transmit an account of my observations on my return trip to this place through the "Blue Lead" range of Nevada county, Placer county, and the quartz district among the foothills near Auburn, Placer county. I had only leisure to remain one day at Dutch Flat, one at Gold Run, and one at or near Auburn; and such information as I can communicate is more the result of previous acquaintance with the country than of present research.

Throughout the route traversed as above I was principally impressed with the decay of the mining towns and the depopulation of the country. If this should continue in the same ratio as it has progressed since my first acquaintance with the part of country referred to (some five years since), we will soon have deserted towns and a waste of country torn up by hydraulic washings, far more cheerless in appearance than the primitive wilderness of 1848.

The causes for this stagnation and the remedy are subjects for your observation and reflection. I shall proceed to give the simple facts of the condition of the country.

Immediately to the east of the basin in which are situated the towns of Grass Valley and Nevada, is a ridge running nearly north and south, and known as Greenhorn mountain. On the east slope of this mountain we find the ancient channel known as the Blue Lead, and on which are situated the towns of Hunt's Hill, Red Dog, You Bet, and Little York, in Nevada county, and the towns of Dutch Flat and Gold Run in Placer county. The lead referred to is well defined to the north of Deer Creek, Nevada county, and to the south of the north fork of the American river, in Placer county; but my remarks apply only to that part of it lying between those streams, some twenty-four miles in length, but embracing at least three-fifths of the mills employed in crushing cement on the Blue Lead.

For convenience of description the mining interests of this section may be classed under three headings, viz.: hydraulic mining, cement mining, and river sluicing, the latter referring to the washings of the tailings in the present water courses.

HYDRAULIC MINING.—The auriferous deposit of this section is from three-fourths of a mile to one mile in width, and the depth of pay dirt varies from 80 to 180 feet from the surface to a bed of hard, cemented gravel, which is not sufficiently rich to crush under stamps, and too hard to be disintegrated by the force of water. This bed of gravel, some fifty feet in thickness, is underlaid by the peculiar blue cement which gives the channel the name of "Blue Lead." Probably no part of this State has yielded as rich returns to the hydraulic miner as the range here described; but this kind of mining is now only systematically carried on in one district on the range, known as Gold Run, Placer county. This district was opened about four years since, and still has enough ground left for two more seasons, exclusive of the present one. The yield for 1866 of this district alone, about two and a half miles in length, was estimated by the local bankers at $350,000; for 1867, $500,000. The yield of the present year will not probably exceed $400,000; but this is owing to a miners' strike against the ditch companies which prevented the early opening of the claims, and not to a deterioration of the character of the auriferous deposit. The present price paid for water in Gold Run district is seventeen cents per inch for twenty-four hours, a reduction of nearly 20 per cent.

from prices of previous seasons, but still not enough to satisfy the demands of most of the ground owners, who prefer to await a further reduction. These companies use from 350 to 600 inches. This water passes out of the guage boxes with a pressure of six inches above the feed aperture. The banks here are from 100 to 200 feet in height, and of more uniformly a gold-bearing character than any district now being worked in the State. The tailings from this district run into the north fork of the American river and are there lost. In the Nevada county end of the range described, hydraulic mining is still carried on extensively in places, but not with as good results, though water is much cheaper in some cases, being as low as ten cents per inch for twenty-four hours. The towns of Hunt's Hill, Red Dog, You Bet, and Little York were formerly the centres of active hydraulic operations; but this kind of mining is now laboring under the depression incidental to this business throughout the State, though there is still a vast field for it.

CEMENT MINING.—The gold-bearing cement lies next to the bed-rock of the ancient stream, and can be worked with profit where the channel has been reached, for a thickness of from ten to twenty feet, and a width, which varies with the conformation of the channel, of from twenty to forty feet—the pay being richest where the channel is narrowest, as a general rule. This channel is, doubtless, as continuous as the auriferous deposits above it, but has only been opened at spots which are designated by the location of the towns heretofore named. No branch of mining is attended with more risk and uncertainty than this, but when successful the yield is enormous. This kind of mining will eventually be extensively prosecuted throughout this range, but not until some cheaper process is discovered than the one now in general use—that of crushing with stamps. Whether the "Cox pan," with some improvements, will not present the facilities desired, is a question which the experience of this year will decide. It is estimated that a stamp will crush quite as much of the hardest cement as of quartz. The larger boulders are thrown out at the dump-house, where the cement is broken up preparatory to the cement being fed in the batteries. The gold, being mostly free, is caught in the batteries by amalgamation; the pulp thence passes over copper plates and in sluices. Without claiming to be an expert in such matters, I have no hesitation in saying, that 20 per cent., at least, of the fine gold is *needlessly* wasted and lost, for want of longer sluices and settlers. Probably 33 per cent. of all the gold is lost, as some of it is "rusty" and needs grinding. Of the seventeen mills located on this channel, but two are run by steam—the others having water power. One of these claims, which I visited two years since, was being run at an expense, for mill and mine, of $500 per week. This claim was open by a bed-rock tunnel 1,000 feet long, with sufficient fall to drain and carry the cement to a ten-stamp mill run by water power. The receipts of the owners, at that time, were not less than $2,500 per week, and it has steadily paid large profits ever since. An adjoining claim was noted for a production of $60,000 in ninety days, about the year 1865. A few miles above I visited a claim which had cost its owners $30,000 without getting any return. This latter claim took out their cement through a shaft 135 feet deep, and were much troubled with water. This mill, (ten stamps,) hoisting and pumping works, were run by water power, which alone cost $25 per 24 hours. I learn that they have struck pay dirt this season. The claims in the vicinity of the town of You Bet have proved the richest on the channel. Two and a-half miles southerly of Gold Run the same channel has been found at a point where it crosses the North Fork of the American, or, more properly speaking, where the North Fork has cut through the ancient channel. At this place (Stone's Mill) the bed-rock terminated abruptly, about 1,000 feet above the present level of the water of the North Fork of the American, and the cemented mass was plainly exposed to view. An eight-stamp mill was erected, and the mass worked by breaking it down, having first loosened it by heavy explosions of powder, in drifts run for the purpose. In consequence of the great facilities thus presented, this claim has steadily paid since the commencement of the enterprise. I visited this ground a few days since, while at Gold Run, and do not think they are in the center of the channel, but on a shelf of bed-rock. I form this opinion from the absence of the large boulders, petrified trees, brush, sand-banks, etc., usually found in the channel. This channel runs northerly under the Gold Run district to Little York, and perhaps Dutch Flat. Southerly, it makes its appearance at the same elevation on the opposite bank of the North Fork of the American, near Iowa Hill, from whence it is easily traced for many miles. The town of Dutch Flat, which lies to the north of the Gold Run district, is not on the direct north and south line which the channel seems to follow; nevertheless, deep explorations there this summer have disclosed the presence of the Blue Lead, but whether on a bend of the main channel, or on a feeder or affluent, can not be positively known. [See the plan inclosed.] The following are the number of mills and stamps erected on this part of the Blue Lead:

LOCALITY.	MILLS.	STAMPS.
Green Mountain,	1	10
Hunt's Hill, (Gouge Eye,)	3	24
Red Dog,	4	36
You Bet,	6	56
Little York,	3	26
Dutch Flat,	1	4
Gold Run,	1	8
Totals,	19	164

NOTE.—Of these 164 stamps not more than 80 are running this year.

The channel is often said to be "lost," and this accounts for the number of claims lying idle. More properly speaking, they have come upon an unprofitable spot in the channel not favorable to the deposition of gold—though sometimes it meanders out of a particular claim.

RIVER SLUICING.—The range I have described presents extraordinary attractions for this class of operations, which are now prosecuted but on a limited scale, but destined to become one of the greatest interests of this part of the country, on account of the number of large streams crossing or running parallel with the best mining ground, and which are filled to a depth of from thirty to fifty feet with the accumulated tailings of ten years of extensive hydraulic mining. The most prominent of these streams are the Bear River, Steep Hollow Creek and Greenhorn Creek; there are, besides, many ravines and cañons, noted for the extent of their accumulations and the former rich character of the adjacent ground. In the early days of hydraulic mining, no allowance was made for the existence of fine gold, and this character of wealth was carried off by the strong and rapid streams of water running over the sluice boxes, which were then of a steeper grade and much shorter than those now used; besides, the advantages of "dumps" and "undercurrents" were then unknown. The result was that a large proportion of the gold was lost—probably one-half—and now lies on the bottom of the streams which were the receptacles of the tailings. A preliminary survey of Bear River was made several years since with a view to the inaguration of an extensive system of tail-sluicing, but the fall of the stream not being sufficient to carry off the tailings, the project was temporarily abandoned. This object can, however, be accomplished by running a tunnel, a mile and a-half in length, through the ridge dividing Bear River from the North Fork of the American, which latter stream is several hundred feet lower than Bear River, and laying the sluice boxes in the bottom of this tunnel. Should the project of Sanford & Co., of running-off the tailings of Greenhorn Creek, prove remunerative, this immense work will doubtless be undertaken. Sanford & Co. have purchased and located ten miles of Greenhorn Creek, and commenced putting in their sluice boxes last year. They were much damaged by the extraordinary high waters of last season, and their experiment has not yet demonstrated the profit of this class of operations, but practical men express no doubts of their eventual success.

PRESENT CONDITION AND FUTURE PROSPECTS.—If the condition of the mining towns along the route I have laid out is to be taken as a criterion of the mineral wealth of the country, then a very discouraging picture would be presented. But to do this would be to do an injustice to a district which I believe is yet destined, with the aid of capital, to add millions of dollars to our circulating medium. The causes of the decay of those towns are easily found. The large sums of money which the mines have yielded have not been spent here in making homes and opening new channels of mining enterprise, but in the majority of cases the miner, as soon as he made his "pile," has gone elsewhere to spend it. With the new population which the country requires this will not again occur. The soil, which a few years since was thought worthless except for the gold it contained, is now demonstrated to be productive, if not of all the necessities of life, at least of all that make a home luxurious and pleasant. The grape, fruits and vegetables of all kinds grow here with a profusion elsewhere unknown, and the new class of miners will learn that here they can provide themselves with homes which will make life endurable without the enormous gains expected in early times. Nearly all these towns have, at some period, been destroyed by fire and rebuilt in a day, but now they are suffering from the equally sure but slower ravages of time. The town of Red Dog has not one-half its buildings occupied, and at present none of the cement mills at that place are running. You Bet still retains some of its former prosperity. Little York has deteriorated nearly as much as Red Dog. Dutch Flat, a few years since, had a population of 2,000; at present I should judge the population to be about 1,000. On the main street, here, we find dilapidated sidewalks, vacant hotels and stores, and an occasional ruin of a house which has fallen from the rotting of the timbers which supported it. Hunt's Hill (known in early days as Gouge-Eye) is supported by the cement mills of the Gouge-Eye and Eastern Companies, whose claims have steadily paid for several years past. Gold Run is the only prosperous town on the part of the Blue Lead range I have visited.

This part of the country is now passing through a crisis. It is an interregnum in which mere labor has nearly exhausted its efforts, and capital has not yet come to its assistance. The gold is in the ground, but not so near the surface as to be extracted by mere labor. Enterprises of great magnitude, requiring capital and engineering skill, must be prosecuted, and when completed, this region will enter on a career of prosperity which will last for twenty years or more, and repay their projectors one hundred fold. This is not a mere visionary statement, but is founded on observation, and an acquaintance of several years with the resources of this range. The tailings of the rivers must be worked over; bed-rock tunnels must be run in the ridges, for the double purpose of drainage and the extraction of the lower deposit. To give a few instances: The hydraulic ground of Dutch Flat, one of the richest localities in the State, is not all washed off, but operations have ceased for want of fall. Let a bed-rock tunnel 2,000 feet in length be run from the level of the Bear River, under the ground to the back of the town, and a new bench, 100 feet in thickness, can be run off over sluice boxes, to be placed in the bottom. The existence of the Blue Lead under this ground has been demonstrated by the prospecting shaft of Mr. James Taif, of this place. The cement could be taken out through such a tunnel, which would necessarily drain the whole lead; but it lays so deep here that individual enterprise on each claim, in raising and pumping, will not pay. Such a tunnel, by means of drifts, would work the whole lead at this place. There is an abundance of gravel here, and the miners in some cases offer half their claims for machinery to work it. Such machinery, with water power, and including an extra $1,000 for putting the claims in better working order, would not cost more than $4,000—a high estimate. It has been estimated that the main tunnel, above referred to, would cost $25,000, but I think this too low. Near Gold Run it is contemplated to run a large tunnel, with double set of sluice boxes and tramway for cars, a distance of 5,000 feet. This will not be needed for several years, as there is yet plenty of fall, but it is wisdom for the miners to take time by the forelock. The ground under which this will run, is as rich as any in California, and the Blue Lead is developed both to the north and south of its proposed course. The estimated cost of this project is over $150,000, and work will be commenced this season. This tunnel will begin to pay when the first 1,000 feet is completed, and at 2,000 feet it will strike the channel of the ancient stream, and thence run at right angles, parallel with it. Millions of cubic yards of auriferous dirt and gravel must run through this tunnel, which debouches into a deep ravine, from which the tailings will find their way into the North Fork of the American. When it is considered that the usual two weeks' "clean up" on the smaller of these claims, using 350 inches of water, is rarely less than $3,000, can any doubt be felt of the necessity of this work. There are many other projects which could be mentioned, but being of the same nature, these will suffice. The best mining properties in California, at Smartsville, Yuba county, and San Juan, Nevada county, owe their value to extensive works of this nature.

The capital necessary to prosecute these great projects must come from the East, or from Europe. Here in California we are accustomed to high rates of interest and punctual payments. No man puts his money out without the expectation of realizing in a few months, by a sale, or getting his interest promptly every month. The capital required here is of that class which can wait patiently for a year or two without a return; but when that return comes, it will be nearer ten per cent. per month than one per cent. on the investment.

I have made this report much longer than I originally intended, but it occurred to me that as you were travelling hastily through the country, it might prove interesting to compare the opinions you have formed as to its future with mine. I shall not here refer to the quartz interests of Placer county which do not amount to much.

W. A. S.

NEW PUBLICATIONS.

PRACTICAL SUGGESTIONS ON MINING RIGHTS AND PRIVILEGES IN CANADA, *with an Appendix containing the Gold Mining Regulations, etc.* By ADOLPHUS M. HART, Barrister at Law of Lower Canada, and Counsellor at Law of the State of New York: JOHN LOVELL, Publisher, St. Nicholas street, Montreal, Canada, 1867. Sold by VOORHIS & BAKER, 66 Nassau street, New York:

This is a neat little work of some fifty odd pages, and is published in the belief that it will be interesting to the people of Canada in the extent and value of whose mining enterprises have become of great importance. The work is not the result of a hasty compilation for the simple purpose of getting together, for publication, some ideas on mining legislation, but as the author intimates, it is clearly the result of a patient searching investigation in the field of mining jurisprudence. This is at once seen in the numerous authorities cited by the author in support of the views he has expressed. The writer has discussed, successively, the following subjects: Property in Minerals and the Rights of the Crown; The Mode of Conveying Mineral Lands; The Alienation of Mining Rights by Will or Descent; The Rights belonging to the Owners of Mines, the injuries they may sustain, and their Remedies; What the Grant or Lease of Mining Lands should contain, Special Covenants, etc.; Joint Stock Associations and Acts of Incorporation.

These topics are considered, one after another, briefly to be sure, but, nevertheless, in a clear masterly manner, and indicating, at once, that the author knows what he is about. It is a work that all, who are in any way interested in mines, by ownership, or otherwise, should avail themselves of. Especially should citizens of the United States, who own mining property, or are interested in mineral lands in the Canadian Provinces, make it a point to read this little book. Men of the legal profession and others outside when "legal operations come in their way" cannot fail to gather much useful information from this carefully written work.

Original Papers.

WRITTEN FOR THE AMERICAN JOURNAL OF MINING.

LOCOMOTIVES FOR MINES.

BY R. P. ROTHWELL, M. E.

The economy effected in the cost of transportation, by the substitution of locomotives for horses and mules on railways, has led to many attempts to introduce them also in mines. For several reasons, these experiments have not proved successful till quite recently. I purpose to put on record a few notes of the results obtained by what I believe is the first mine loco-

motive which has been put into successful operation in this country. This machine was built for the Lehigh Coal and Navigation Company, at the suggestion of the Company's mine agent at the Panther Creek Mines, Mr. Thomas Phillips, who has the satisfaction of having realized his most sanguine anticipations.

The locomotive measures 12 feet in length, by about 4 feet 4 inches in width, and 6 feet in height from rail to top of stack or roof. It weighs 11,000 pounds, with water and fuel. The wheels are about 2 feet diameter, are four in number, and are all drivers. Distance between the wheels, 5 feet 6 inches; gauge of track, 3 feet 6 inches; rails, 40 pounds per yard. The engine was built by Messrs. Grice and Long, of Philadelphia, and cost $2,800, or say $3,000 at the mines.

The work to be done is to draw the wagons or "cars" from a "coal-breaker" into the mine, a distance of about 7,500 feet, 5,500 feet of which is in what is known as No. 5 Tunnel, near Summit Hill. A great part of the road is in a gangway in the coal of a seam overlying that worked. As the coal is a hard anthracite, there is no danger to be feared from fire.

The engine has now been at work for nearly two months, and its working expenses are known with accuracy. In order to compare them with the cost of doing the same amount of work by mules, we will assume the mine to be working to its full capacity, 600 tons of clean coal per day. To do this work with mules would require the handling of 300 "cars" of two tons each (99 cubic feet) per day, and about 40 cars of "slate," "waste," etc. To haul these over 7,500 feet of road requires three teams of seven mules each, drawing 20 cars in a train, there are needed, therefore, three sidings to pass trains on, and 60 cars are on the road at a time; there will at the same time be 20 in the mines, and 20 outside; in all, 100 cars will be required to do the work. The wear of the roads by mules requires the constant work of one man to keep them in repair.

To do the same amount of work with the locomotive requires but 50 cars, since the engine takes in a train of 15 cars in less than half the time required by the mules; 15 cars in the mine and 15 outside, or say 50 in all, suffice to "handle" 600 tons of coal per day. There is but one "siding" required by the engine; it is at the end of the road, and is arranged with an air shaft to carry off the steam and gases from the combustion of the coal.

The engine has abundantly proved itself capable of drawing 15 to 18 cars, the road being so graded as to make the work of drawing the loaded wagons out no greater than that of taking the light ones in. Its maximum speed is 9 miles per hour, though it does not run at that rate "underground"—it draws a train with ease round a curve of 75 feet radius.

Making a comparison of the working expenses of these two motors, we have:

LOCOMOTIVE PER DAY.		MULES PER DAY.	
1 Engineer	$3 50	21 mules at $1 00 per day	$21 00
1 Boy	1 75	3 Drivers	6 30
Repairs, oil, fuel, &c.	1 55	Extra cost of keeping road in repair	2 00
Total	$6 30	Total	$29 30

Leaving a balance of $23 00 per day in favor of the locomotive.

The men are sent in to their work on the wagons. When these are drawn by the engine, there is a saving of 15 minutes, morning and evening; and as one miner cuts, on an average 14 tons of coal (clean and prepared for market) per day, has one laborer to load the same, it will effect a saving of 30 minutes per day for eighty-six men, or four days at $2 00= $8 00 per day, by using the engine for this work. I may remark that the average of 14 tons per day is above that performed by the miners, generally, throughout the anthracite mines, owing to the high inclination and great thickness—from 20 to 50 feet—of the seams in the Panther Creek valley. In the Wyoming coal-field, the average amount of coal mined per man per day is about 10 tons.

If we consider the first cost of the motors referred to, we find:

Locomotive	$3,000	21 mules at $200	$ 4,200
50 mine waggons	6,250	100 mine cars at $125	12,500
1 siding, say	1,000	3 "sidings" for passing trains	3,000
Total	$10,250	Total	$19,700

Showing a Balance of $9,450 in favor of the engine.

Taking the interest on the above at 10 per cent., and allowing 200 working days per year, since these mines are not worked during the winter, and counting twenty cents per day for keeping each mule during 100 days in winter, we obtain a total saving of $7,505 per annum, or more than six cents per ton on the coal mined effected by the introduction of the locomotive. The engine would pay for *itself two and a half times in the course of a single year.*

This comparison of a few of the principal items of cost and working expenses may be accepted as substantially correct for the location referred to. The actual working of the locomotive justifies the conclusions deduced, yet its introduction is still too recent to warrant a very positive assertion that the results will always show so large a balance in its favor. These figures are, however, quite sufficient to justify the hope of effecting, in many of our large mines, a material reduction in the cost of that very important item, "underground conveyance."

The most serious objection to the locomotive underground will certainly be the vibration of the air in the gangway; in the case mentioned no serious inconvenience is experienced, the tunnel being well ventilated, and there being an "air-hole" at the siding where the engine stands while in the mine; but in ill-ventilated mines this question will become of the greatest importance, and should receive due consideration.

The Lehigh Coal and Navigation Company purposes having two more of these engines built for mine use, the present having already proved itself so successful.

This is the first instance where the mine locomotive has been *successfully* employed in our American mines. There are doubtless many cases where it may be applied with manifest advantage, as might also the method of hauling with a fixed engine and an endless rope, now coming into use in some of the English collieries.

WILKESBARRE, Pa., Sept. 1, 1868.

Scientific Meetings.

[FROM OUR SPECIAL CORRESPONDENT.]

THE NATIONAL ACADEMY OF SCIENCES.

The National Academy of Sciences met last week on Tuesday, August 25, in the Court House at Northampton, Mass., and continued in session until Friday evening. Except the strictly business meetings, held at the beginning and end of the session, the meetings were open to the public, and were well attended, not only by members of the Academy and the few other scientific men, not members, but who were present by invitation, but also by a goodly number of "outsiders," including a fair proportion of ladies. In fact, not the least interesting part of the performance were the half-edified, half-puzzled looks of the fair spectators when some savant, starting with plain English and reasonably simple language, decoyed his hearers beyond their depths, and left them floundering in a sea of algebraic formulæ, or placed them in imminent peril of drowning in a palæozoic ocean. But not only were the ladies thus treacherously dealt with; the members themselves didn't always seem to exactly understand all the details of what their learned colleagues were talking about; and when Professor PEIRCE or General BARNARD were delighting each other with a black board full of equations, the others seemed perfectly content to let them have their own way, evidently consoling themselves with the certainty that "every dog has his day," and each would have his turn at mystifying the others to his heart's content.

The academy is without question composed of the most eminent men in their specialties in the country, and although many of the papers read during the session were certainly as unintelligible to the majority of the hearers as if they had been read in Coptic, they were, nevertheless, appreciated by those who had studied the subject. The authors are very much in earnest, and their labors can hardly be overestimated. Still, while knowing and acknowledging this, we could not avoid recalling to mind Dr. HOLMES' account of a similar society, described so admirably in the "Autocrat."

The National Academy of Science was incorporated by act of Congress in the early part of 1863, for the purpose of bringing together in an available manner, the most eminent and learned scientific men of the country, and enabling them by their counsel to assist the government in the solution of questions of a scientific character and of national importance. During the first year, six questions were submitted to the Academy by the government, among which were inquiries as to the best method for the protection of the bottoms of iron vessels from corrosion by sea water and from fouling, and on methods of protecting the national currency from being counterfeited. These, and other investigations carried out by committees of the Academy, are said to have already saved for the government large sums of money, and to have practically demonstrated the usefulness of the organization, and the wisdom of the step that resulted in its foundation. Not the least important feature of the Academy is that the members receive no compensation for their services, but undertake investigations, submitted to them by government, without hope of fee or reward, thereby securing to the departments disinterested advice from those best able to give it, and protection against the schemes of men who want to "get a fingeron't"—the public treasury.

At the present meeting there were some twenty or thirty papers read, among which were essays by Prof. PEIRCE, Prof. WHITNEY, General BARNARD, Count POURTALES, Prof. WOLCOTT GIBBS, Prof. TWINING, Mr. GABB, Mr. PECKHAM, Prof. MARSH, Prof. S. W. JOHNSON, Prof. BRUSH, etc. The first paper was by Mr. MITCHELL, assistant in the Coast Survey, on the tides in New York Harbor, read by Prof. PEIRCE, the chief of the survey. Prof. PEIRCE subsequently read a paper of his own on a similar subject. General BARNARD, of Washington, read a paper on the motions of the pendulum, illustrated by a blackboard, full of algebraic symbols, which the writer cheerfully confesses were perfectly unintelligible to himself, and he suspects that from the blank looks of others in the audience, he was not entirely alone. Professor TWINING tried to demonstrate that the only invariable meter of length is an apparatus which we can only describe as a complex sort of double thermometer. Professor GIBBS commented rather severely on AIRY'S reduction of KIRCHOFF'S scale, and was followed by Prof. PEIRCE, who handled Mr. AIRY without gloves. Professor WHITNEY, State Geologist of California, and now of Cambridge, read an interesting paper by Mr. S. F. PECKHAM, on Petroleum, more especially with reference to the bituminous products of California. Mr. PECKHAM believes that these substances have their origin in both animal and vegetable sources, those of Pennsylvania being from the latter, while those of California are derived, probably, in great part, at least, from animal remains. He divides them into various classes, according to their chemical constitution. Mr. LESLEY, of Philadelphia, followed the paper with some remarks on the bituminous deposits of Europe and elsewhere.

On Wednesday morning Prof. WHITNEY discoursed on the topography and on topographical work west of the 103d meridian. He exhibited numerous excellent maps constructed under his supervision by the assistants of the California survey, and proved to the satisfaction of all that he had been no idler during his long sojourn on the shores of the Pacific. Not only has he conducted the complicated machinery of his commission, but almost entirely at his own expense, he has caused extensive surveys to be made in nearly all the adjoining States and Territories. The maps exhibited covered nearly all the wall of one side of the room, and were hung from railings, blackboards, and almost every other available point, and still they are but a small portion of what he has done.

The economical spirit of the last legislature of California cut the survey short in the midst of its usefulness, and would have consigned all this invaluable work to oblivion, were it not for the energy and enterprise of the Professor. It is to be sincerely hoped that the next legislature will see the folly of such a step, and, while redeeming the reputation of the State, give him the opportunity of completing what he evidently considers his great life-work.

The paper was followed by comments from Prof. PEIRCE, Mr. LESLEY, and Prof. GUYOT, all supporting Prof. WHITNEY'S idea that the general government should organize a thorough topographical survey of the public domain. In the afternoon, Count POURTALES read a paper on deep-sea dredgings in the Gulf Stream, and exhibited many interesting specimens, obtained during the progress of the work. This was followed by a paper by Mr. GABB, late of the California Survey, on the subdivisions of the cretaceous and marine tertiary formations of California, which excited some criticisms from Mr. LESLEY.

Prof. WOLCOTT GIBBS then read a paper on uric acid, and one on a new method of analytical chemistry.

On Thursday Prof. WHITNEY, by special request, read an account of the discovery of the fossil skull, supposed to be the remains of Mr. BOWERS, of Missouri, together with some notes on its geological position, and followed it by some remarks on other antiquarian discoveries. A discussion took place in which Dr. NEWBERRY, Prof. GUYOT, Prof. BREWER, and Mr. LESLEY joined.

Prof. BREWER then favored the assemblage with a description of the forest vegetation of the Pacific slope, enlivened by some characteristic witticisms. In the afternoon, Prof. MARSH, of New Haven, read a notice of fossil bones discovered at Antelope Station, on the Pacific Railroad, and afterwards the Academy was regaled by two mathematical papers by General BARNARD and Prof. PEIRCE.

In the evening, Prof. HENRY, the President, read a long and very interesting eulogy on the late Prof. A. D. BACHE, which occupied an hour and a half in delivery, and was listened to with unflagging attention by every person present.

On Friday, the last day of the session, Prof. JOHNSON, of New Haven, read two papers on the estimation of Carbonic Acid in analysis and on nitrification, and Prof. WHITNEY read one on some points of the surface geology of the West coast, followed by a discussion between Dr. NEWBERRY and Mr. GABB, in which Prof. GUYOT also took part. General BARNARD closed the strictly scientific part of the meeting by reading a paper on the pendulum and gyroscope. In the evening the members of the Academy met in closed session to transact business and elect members to fill vacancies. They finally adjourned to meet next in Washington. * * *

THE NEW YORK SOCIETY OF PRACTICAL ENGINEERING.

This Society held its stated meeting at Room 24, Cooper Union Building, on the evening of September 1, 1868. The President JAMES A. WHITNEY being in the chair and WM. B. HARRISON acting as recording Secretary.

Mr. LAURENCE HOLMES exhibited some specimens of cast iron bells that contained a small portion of alloy that rendered them remarkably sonorous It was stated that the metal thus alloyed is very hard, was especially adapted for bells, but could be used for dies, etc., as very sharp castings could be obtained from it.

Mr. HARRISON stated that this metal had the appearance of being alloyed with chrome iron, which rendered ordinary cast iron very hard. Chrome iron is used for safes, and no tools of steel can cut or penetrate it. He had formed fine alloys of cast and wrought iron by adding tinners scrap, to the already molten iron.

The regular subject for discussion was then announced, which was: "Cleaning and disinfecting the streets of cities," and a paper upon that subject, by C. F. JENNY, was read, in which it was stated that, next to the water supply there is no subject which so vitally concerns the inhabitants as the cleaning of streets and other sanitary means for the preservation of health; for, even with an abundant water supply, unless the flooring or covering of the streets, and plan of drainage and sewerage of these streets as well as the buildings, is of the proper character, much evil will be the result. Streets paved with cobble or broken stones, or any plan of paving having earth filled around the stones was particularly characterized as harboring the germs of disease. Mr. JENNY argued, that washing is the best method of cleaning streets, and for this purpose, supposing New York City was to be so cleaned, water pipes, running from the rivers each side of the city, could be so laid that hose could be attached, and engines at the wharves could force water in sufficient quantity to thoroughly wash all necessary places. The Croton water should be economized, and with this end in view, he would use the sea water, and with this use another advantage would be gained, as the chloride of sodium contained in the water would tend to arrest the decomposition of animal matter.

A paper was read from Mr. PERRY DIXON, who remarked, that a great deal had been said about cleaning the streets, which, when cleaned by sweeping, were nearly as foul as before, as the pernicious matter is mostly held underneath the surface and away from the action of brooms or shovels. He advocated washing; and recommended a machine for that purpose, consisting of a traction engine that could force water from an accompanying tank, through hose, to whatever point it was needed.

Mr. A. W. HALL remarked, that the HON. Mr. DRIGGS, of Michigan, had patented a novel plan for washing streets. His arrangement was to make every lamp-post a water-post, and have the awning bars composed of pipes with jets pointing to the center of the streets; these jets could so play upon the street that the impact of water would carry off the dirt and filth to the sewers.

Dr. FRANKLIN remarked that it would be absolutely necessary to disinfect the garbage which was thrown out, in some portions of the city, and the same would be necessary with cess-pools and water-closets. The washings of the streets being received in the sewers, would prove a fruitful source of evil and disease.

A lengthy discussion then followed, relative to the value of disinfectants, deodorents, etc. McDOUGAL'S powders, charcoal, and sulphate of iron, were severally brought up, but the latter was conceded to be the most important. Air in mo-

tion was noticed as being of sanitary importance, and, for this purpose, heat currents induced by open fires was proposed.

Mr. J. K. FISHER was then introduced to the Society, and remarked that he had become interested in the subject of cleaning streets many years ago. He recommended washing the streets by means of jets, and would employ engines, which might be used for the double purpose of performing this duty, and also operate as fire engines. He recommended a system of floating engines, which would perform a portion of their duty by washing the docks, etc. His great idea is to go to the root of the evil, and he proposed to introduce pavements made of iron that could not produce dust by abrasion, and would not permit of deleterious washings to penetrate the bed on which they rested; he discarded horses on all paved roads as characterizing a barbarous age, and warmly advocated the employment of steam-propelled carriages.

Much argument followed Mr. FISHER's remarks, after which notice was given that the Committee upon "Water Meters" would hold a meeting at the editorial rooms of the JOURNAL OF MINING, 37 Park Row, on Tuesday morning, September 8th, at ten o'clock. Inventors and others interested in the subject, who have meters or plans of meters, were invited to be present. Upon a motion being made, the Society adjourned to meet again on the evening of Tuesday, September 15th.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

In continuation of our report on the doings of the American Association for the Advancement of Science, we subjoin the following articles, that to many may possess a peculiar interest:

EVIDENCE OF GLACIERS IN MAINE.

Mr. N. T. TRUE read a paper on the "Phases of glacial action in Maine at the close of the drift period." This paper discussed the effects which caused the peculiar rocky appearance observable along the coast of Maine, especially in the vicinity of the Androscoggin river. Large basins worn in the hard granite were found, while the pieces of rock which had become detached from the ledges, presented the appearance of having been torn off by an immense pressure, which was undoubtedly produced by icebergs moving by glacial force over the face of this country. The basins were propably worn in the hard granite by the same force acting for a long time in one particular place. Some idea of the length of the glacial period may be obtained by comparing these cavities with similar cavities worn in blocks of marble by constant action of water and gravel under a heavy pressure, and judging by such a basis it could not have been less than ten thousand years that the coast of Maine was under immense icebergs and undergoing the change which it now presents. In certain parts of Maine, and extending even into Canada, large pot-holes were found which were evidently formed by this same pressure just previous to the decline of the drift period and in the early commencement of the glacial period. Wherever the glacial action has been marked as violent, there these pot-holes are most frequently met with, and are proportioned in size to the glacial action, and hence it has been deduced that they are the result, mostly, of glacial rather than of drift action.

ON THE ANTIQUITY OF MAN.

Dr. J. W. FOSTER, of Chicago, read a paper on "The Antiquity of Man in North America." He said that it was formerly supposed that man was among the most recently created of animals, and that his creation had occurred, too, at a time when the earth had assumed nearly its present condition of soil and climate. Recent discoveries show, however, that this opinion is untenable. He then proceeded to discuss the conditions under which human remains had been discovered in Europe. In the valley drift of the Somme, the Seine, the loess of the Rhine, in the British islands, and so on, remains of men had been found, intermingled with those of animals extinct, as well as with animals which have no longer habit in those regions, these being all found in such position as to show that they were contemporaneous. Among these he stated the elephant, hyppopotamus, cave bear, cave lion, cave hyena, reindeer, etc. This would seem to show that, at a time, an Arctic climate prevailed where now the olive and the vine grows.

* * * In the plastic arts the mound-builders were in advance of the stone age of Europe. He exhibited the two specimens from the mounds near the battle-field of Belmont in Missouri. On one, probably a water pitcher, was impressed the features of the potter's race, which, if it was such, showed it to be diverse from the red man by the absence of the obliquity of the eye and by the variation of the profile. The whole contour, he thought, showed a good degree of intellectual development. The second specimen seemed to be a statuette, probably representing a captive; the arms being bound to the body by cords, and the art of the fashioner being so far advanced that he was enabled to exhibit the effect of the restriction of the cord by impressing an expression of pain upon the features.

"Their mining operations he conceived to have been carried on on a scale of great magnitude. There are few copper veins on the shore of Lake Superior which do not show traces of their labor. When these excavations were made he could not tell, but he felt justified in dating them back at least a thousand years."

Answers to Correspondents.

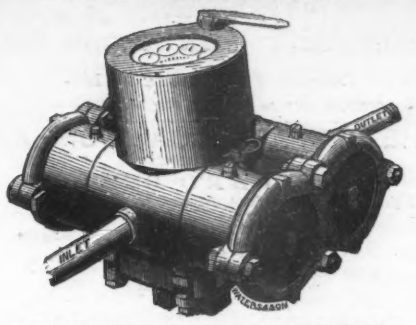
A. S., of NEW YORK. The difference between flint and crown glass is simply that the first contains lead oxid, and the other does not; pure crown glass is, chemically speaking, a silicate of lime and potash; flint glass contains, in addition, a larger or smaller amount of silicate of lead, and is much heavier. The optical refraction and dispersion of such glass is in a direct ratio to the amount of lead it contains.

P. H., OF CHICAGO. The story about the traveling or walking stones going the round of the papers now, is evidently a canard; even strong magnets would not behave in the way these stones are said to do. Any one acquainted with magnetic ores, knows better; it is a story of the same kind as that which tells us that people lost their boots from their feet because of the magnets in the ground attracting the nails.

S. R., OF WASHINGTON. The new substance, imitation of Meerschaum, you inquire about, is made of potatoes, soaked in diluted sulphuric acid, and dried under pressure. It is said that turnips, treated in this way, produce an imitation of horn; and, carrots, beautiful artificial coral.

☞ M. Rosentiehl has discovered a new alkaloid, isomeric with toluidine, a substance contained in aniline of the shops, and which crystallizes readily. There is, however, another toluidine which is nearly liquid, and yields, with arsenic acid, a red coloring matter, analogous to fuchsine. It boils at 190 degrees centig., and if cooled to freezing-point, a single drop of water will suffice to determine the solidification of a large portion of it. This proves to be the common sort; but the remaining liquid still possesses the properties of the other kind, though it yields a smaller proportion of the new red coloring matter. The discoverer proposes calling it provisionally pseudo toluidine.

H. R. WORTHINGTON'S



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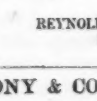
CLOVER LEAF  TRADE MARK

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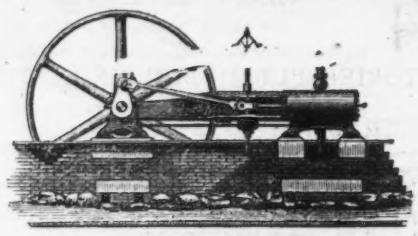

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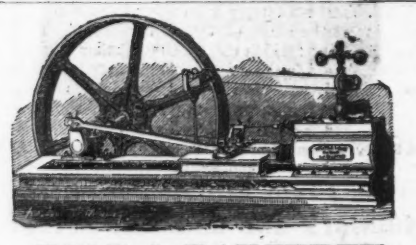

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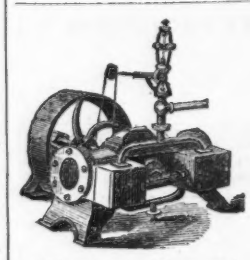

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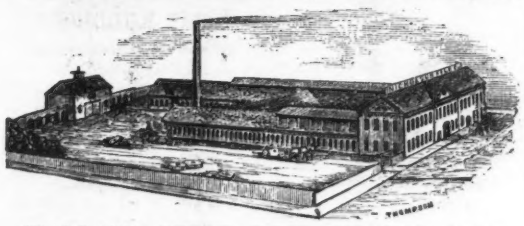

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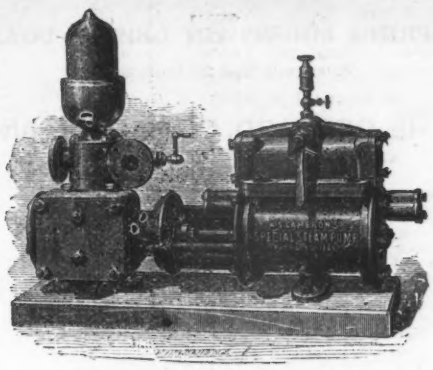

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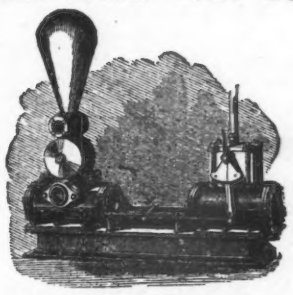

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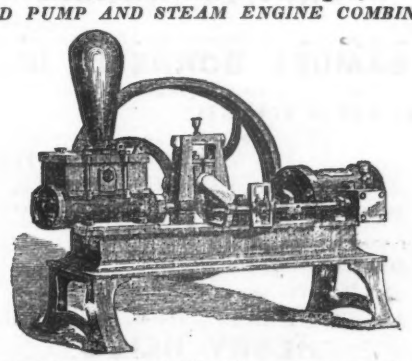

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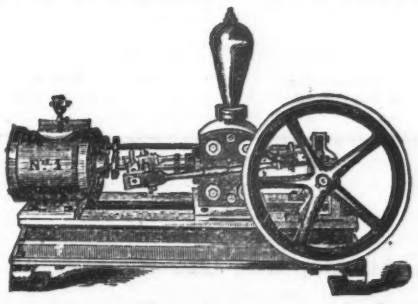

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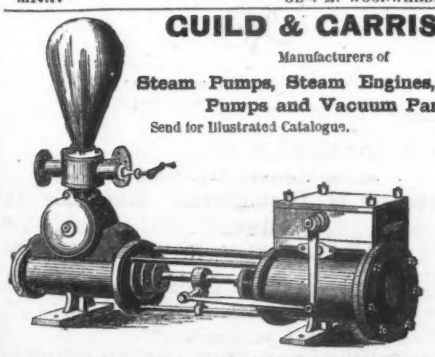

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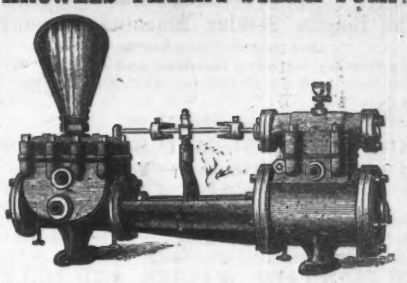

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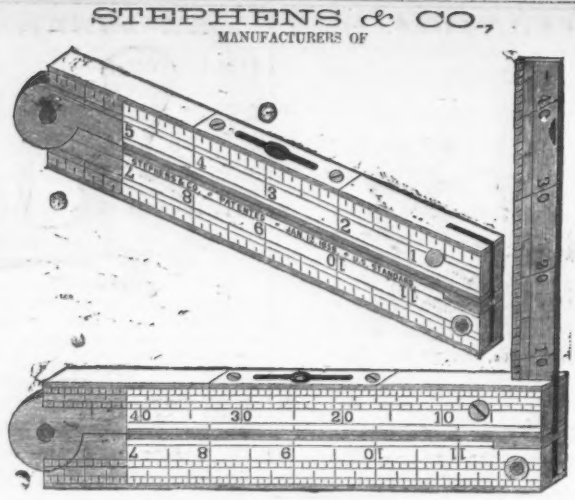

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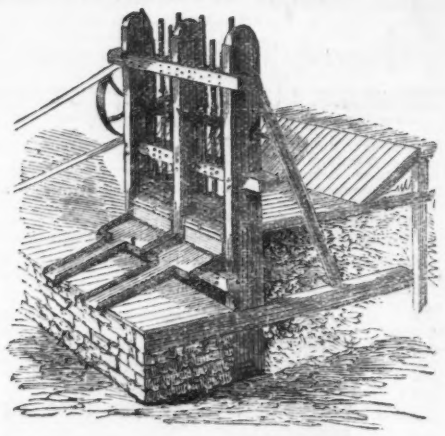

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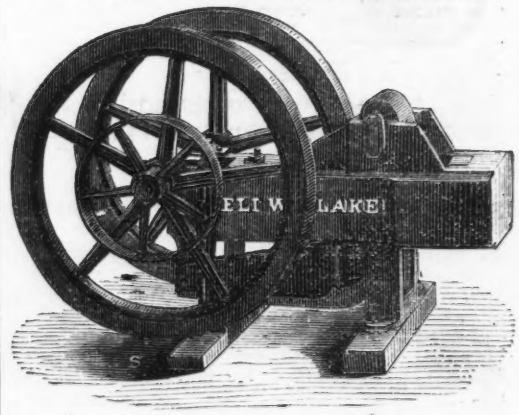

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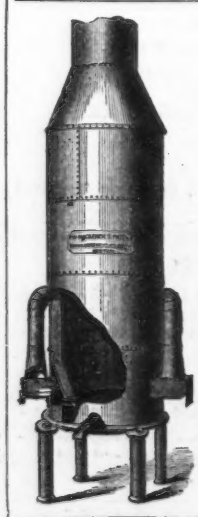

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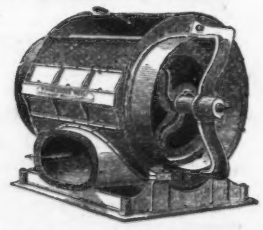

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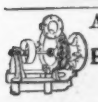

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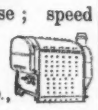

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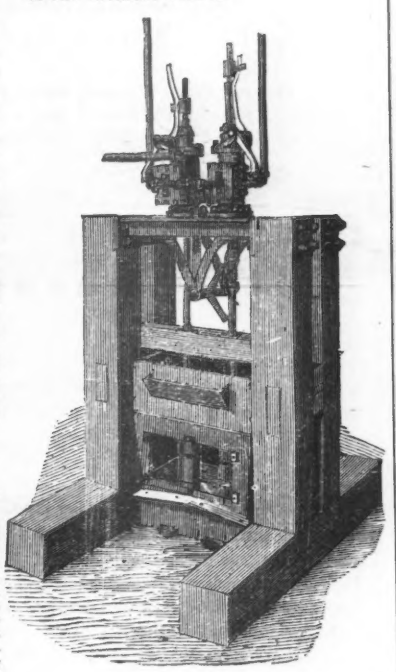

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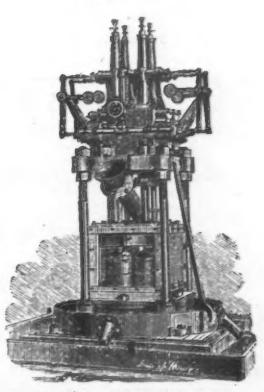

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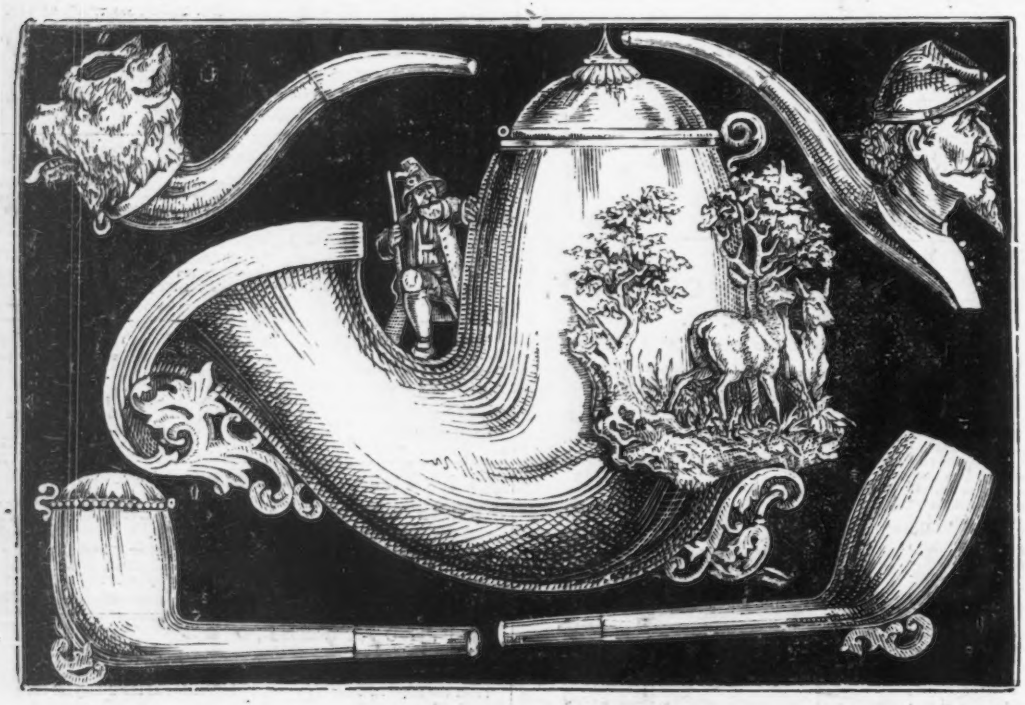
So long as the practice of smoking is generally indulged in, as at present, the use of meerschaum may be hailed as a useful amelioration, owing to its property of absorbing the nicotine which forms the most deleterious substance contained in the fragrant weed. In its natural condition meerschaum is white or cream-colored, and of a soft, fatty or greasy nature to the touch. The best and purest article bears a bluish tinge, and its surface is covered with very small star-shaped flecks, but this latter kind is seldom seen in this country. Denominating this as the first quality, there are several inferior qualities, each differing from the others, yet being genuine meerschaum. A peculiarity of the first quality is its capability of receiving a high polish, and having a perfectly even and smooth surface, and coloring evenly throughout, whence it is termed "spiegel meerschaum"—*spiegel* being the German word for mirror.

There are so many errors prevalent concerning the origin of meerschaum, that a few particulars may be interesting. It is a sort of chalky clay, which, owing to its lightness, the Turks call "keffe kiel," meaning "foam" or "light earth," and in former times this name suggested the idea that it was formed from the hardened foam of the sea. It is composed of hydrate of magnesia, combined with silex or flint, and is found in beds in various parts of Europe, but particularly in Natalia and near Thiva—the antique Thebes—in Greece, but is also procured near the village of Killschill, and the town of Eskischeher, in Lesser Asia, where it is sometimes discovered in veins twenty feet below the upper stratum of soil. When first taken out of the earth it is white and soft, and with water makes a lather like soap, and is sometimes used for washing by those who live where it is found. It readily hardens without exposure to the fire, and the miners declare grows again in the excavated hollows by a sort of foamy deposit reproduced from below. Meerschaum is also found in the vicinity of Paris and Madrid in rough, rounded pieces of uneven and slightly shining surface. In Spain it is sometimes used for ovens and stoves.

The commerce of meerschaum is very considerable, not merely in the raw material, but in the manufactured article, as the value of a pipe may be enhanced to any extent by carving. This is shown in the accompanying cuts, which represent a few of the pipes from the justly celebrated establishment of Messrs Kaldenberg & Son, of 71 Nassau street, 23 Wall street, and Nos. 4 and 6 John street, New York City. These cuts represent the plainest form in which meerschaum is wrought, and also the most complicated in design, and carved with the most artistic skill. The manufacture of such pipes, and the importation of the raw material, have become considerable enough to warrant an extended notice. Messrs. Kaldenberg and Son import the block meerschaum direct, and of the best quality that can be obtained in Turkey, and no manufacturer in Europe works up finer stock. Their workmanship is equal to the most celebrated makers of Paris or Vienna, which has been practically tested by a fair competition at the Paris Exposition of 1867, and a prize there awarded to them in competition with all nations. They have also received the first and only premium over all other manufacturers, at the American Institute, of New York City, in 1865 and 1867. The high price of the celebrated "spiegel meerschaum" has prevented its general use in this country, but by importing it in the rough, and cutting it themselves, they have overcome this objection. The value of raw meerschaum imported into this country is estimated at a million dollars yearly, and that of carved pipes as much more. The price of meerschaum is according to the size of the fragments. They are received from Asia Minor, being brought to Constantinople in boxes, borne by pack horses. From the Turkish capital they are forwarded to Semlin, and thence by way of Pesth to Vienna, which is the chief market for the article. When wrought up, a plain pipe bowl of superior fineness and beauty will often bring $10 to $20, while the sculptured pieces may reach from $100 to $1,000, depending on the work and the mountings.

The genuine and imitation meerschaum so closely resemble each other that good judges often are puzzled to distinguish them; but when they are heated the difference becomes apparent. The imitation generally is composed of the parings of meerschaum, technically termed "chips," and the whole substance being unable to expand or contract uniformly, cracks when heated, and the oil or wax in it, not being equally absorbed, slowly burns, and in burning emits a most offensive smell. Such imitations never color, or if they do a little, the pipe generally cracks. These are often palmed off as the second quality of genuine meerschaum. Lightness of weight and ability to float in water are no tests of the genuineness of meerschaum. The cost is one-sixth of the genuine article.

The amber used by Messrs. Kaldenberg & Son for mouthpieces, is imported by them in large quantities, and is worked into any shape or size that may be desired. An entire pipe made of it by this firm, was sent to the Paris Exposition, and was really a curiosity, it being but seldom that a perfect piece of amber of that size can be obtained. Amber is a resinous gum similar in appearance to gum copal, but much harder, and is found on the shores of the Baltic Sea, principally in the Prussian dominions. It has for ages been valued for ornamental purposes, such as necklaces, bracelets, and breast pins. In Europe the cloudy or milky amber is considered the finest, that which is clear being held in no consideration, although each cost the same, except the light green variety, and that which is of one perfectly uniform color throughout. Amber is divided into two kinds, called Fleisen and Erd Bernstein. The former is found in the water; the latter is obtained in mines, and is considered the most valuable, being harder and of a clearer color. Amber, being so hard and so beautiful, has long been prized by smokers for mouthpieces of pipes and cigar-holders, and in Turkey as much as $2,000 has been paid for a single mouthpiece. There are many imitations of this beautiful gum, but none are so hard and durable as the genuine article.



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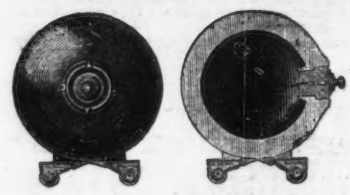

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